The Iron Age

A Review of the Hardware and Metal Trades.

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Some New Tools by the Pratt & Whitney Company.

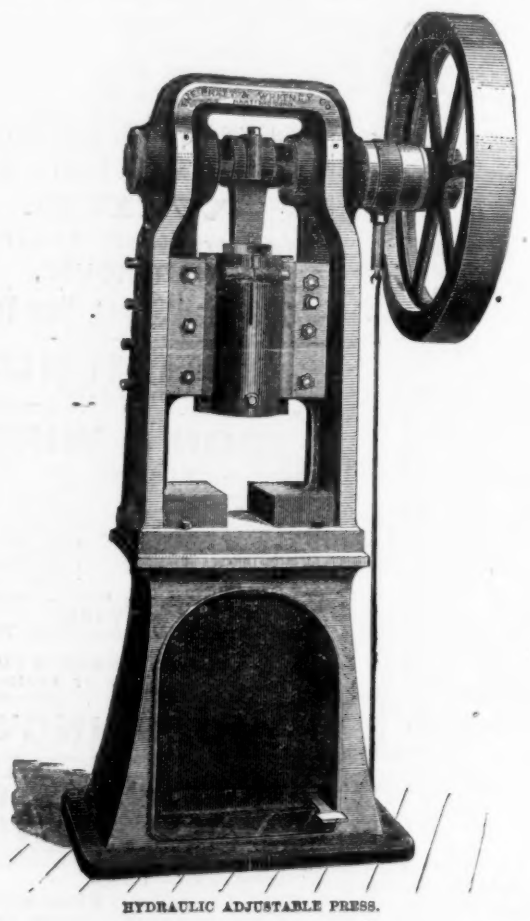
The manufacture of articles having interchangeable parts has developed in this country an industry which was almost undreamed of by the last generation of machinists. There are many men alive to-day who remember the time when the idea of making guns that could be assembled at random without fitting, from piles of the separate parts, was scouted and laughed at. But guns are made in this way, and within a comparatively recent time foreign countries have come to America for the tools with which to manufacture their small arms.

From government workshops the idea soon spread into the various branches of industry. Had the sewing machine been invented before this system of manufacturing was established, instead of afterward, its successful introduction would have been an impossibility. The fine tools required for this class of work has given American manufactures a high reputation all over the world.

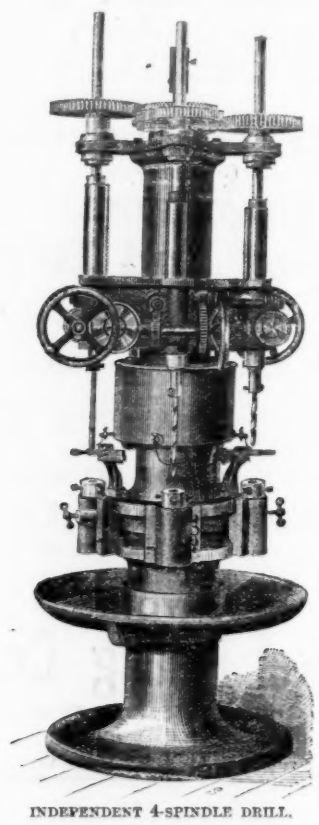
This week we illustrate some tools belonging to this class from the Pratt & Whitney Company, of Hartford, Conn. The Independent Four Spindle Drill is an upright machine, with broad base and columnar support, intended specially for work in which four tools are necessary to finish a hole, as a starting drill, through drill, enlarging drill and finishing drill, or reamer. It will drill holes up to one and a half inches diameter and nine inches in depth. Each spindle has independent feed, and, as they work automatically, one operator can attend to several machines. The piece to be drilled is secured in a holder, indexed perfectly under the drills, and finished before being removed from its fastening. These machines are speeded as desired, and holders are made to suit work. The weight of the machine, with countershaft, is 2850 pounds. Few machines are built with more exactness, as each of the four spindles must, at the will of the operator, take the place of the other on the work without the slightest variation.

The Adjustable Hydraulic Press is a decided novelty. This press is constructed on an entirely new principle, with Stannard's patented hydraulic device for instantly and accurately setting the punch. The connection between the connecting rod and the die is made by means of a cylinder and a plunger working in it. Liquids being practically incompressible, the power is transmitted from the plunger to the cylinder, precisely as though the cylinder was filled with a solid body of metal. By varying the quantity of the liquid the hight of the cylinder which covers the die may be varied to a hair's breadth. The machine is very strong, standing on a broad hollow base, with an open front for the convenience of the operator as he sits at his work. By means of a treadle, the operator actuates a stop-motion that instantly stops the plunger, always at the highest point of its stroke. The crank shaft has a throw of 2 inches, and is of the best cast steel; the journals, 3 inches diameter by 8 inches long, run in boxes plugged with the best Babbit metal; that is, the iron is left in sufficient area to sustain the pressure, while the anti-friction metal relieves the bearing and prevents grinding and heating. The driving wheel face receives a 4 inch belt, and the wheel is 32 inches diameter, weighing 380 pounds. The plunger travels in gibbed slides, and is a cylinder with sides 1 inch in thickness, and contains oil or glycerine (preferably the latter, as it is unaffected by changes of temperature). A hollow piston fits the cylinder, and is connected directly with the pitman. By means of a thumb valve on the cylindrical plunger, the punch may be set to a hair's breadth, simply by pressing the thumb or finger on the knob. The machine works very smoothly, without strain or jar. Punches and dies of any description are furnished with the machine to order. The machine is complete in itself, requiring only to be placed and secured by bolts, when it is ready to receive the belt. The weight is 2550 pounds.

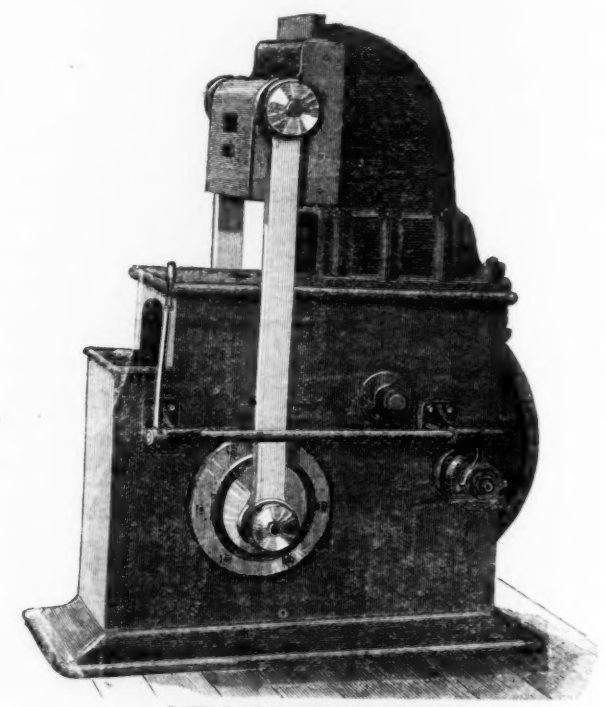
The Double Connection Power Press is a very powerful machine, capable of overcoming a resistance of 400,000 pounds, and is suitable for finishing by cold drawing or pressing forgings which are difficult or costly to mill or file. The driving shaft carries a heavy wheel 3 feet in diameter, the face of which receives a belt for driving the machine. On this shaft is a pinion engaging with a large gear wheel on an intermediate shaft, a pinion on which again engages with a gear wheel on the shaft that carries the eccentric which produces the stroke of the head. The machines are built with a stroke of from 1 to 6 inches, as may be ordered. All the bearings, including those of the heavy forged connecting bars, are cast iron shells plugged with Babbitt-metal. The machine may be stopped and started instantly, while the stroke is at any point, without shock or noise, by means of the Pratt patent friction clutch. The machine is compact, and the gearing is inclosed in the hollow base. Full sets of fixtures and dies are furnished at reasonable rates. The weight with countershaft is 5300 pounds.



HYDRAULIC ADJUSTABLE PRESS.



INDEPENDENT 4-SPINDLE DRILL.



DOUBLE CONNECTION POWER PRESS.

NEW TOOLS BY THE PRATT & WHITNEY TOOL COMPANY.

Production of Pig Iron in the United States in 1874.

We have received from Mr. James M. Swank, Secretary of the Iron and Steel Association, advanced sheets of his condensed report on the production of pig iron in the United States in 1874. The report is accompanied by a table of much statistical value, giving the production of pig iron in the United States for three years, but owing to the crowded state of our columns we are obliged to defer its publication until next week.

The American Iron and Steel Association has received from the producers and from its correspondents full statistics of the production of pig iron in the United States in 1874. The total production was 2,689,413 net tons, against 2,868,278 net tons in 1873, and 2,854,558 net tons in 1872, showing a decrease of 178,865 tons as compared with 1873, and 165,145 tons as compared with 1872. Notwithstanding this decrease, the production in 1874 was much larger than has been generally anticipated—much larger even than partial returns made to the Association at the close of 1874 indicated. This unexpected result is, however, susceptible of a satisfactory explanation. As preliminary to this explanation we give the following statistical resume:

Years.	No. of furnaces Jan. 1st.	No. of furnaces built during the year.	Total number of furnaces Dec. 31st.	Out of blast Dec. 31st.	In blast Dec. 31st.	Production of pig iron in net tons.
1872.....	574*	41	615	115‡	500	2,854,558
1873.....	615	50	665	252	413	2,868,278
1874.....	665†	38	701	336	365	2,689,413

In 1872 there was every inducement for furnace owners to make all the iron that was possible, for prices were high and the demand was constant; hence the hitherto unexampled yield of that year, 2,854,558 tons. In 1873 a number of large new furnaces, built in that year and in 1872, went into blast, and during the first half of the year greatly augmented the production of iron over that of the corresponding period of 1872. Had the prices of 1872 been maintained during 1873, and the demand for iron experienced no abatement, there can be no doubt that the production of 1873 would have reached 3,500,000 tons. But at the beginning of summer it became evident that production was outrunning consumption, and on the 19th of June it will be remembered that a convention of pig iron makers assembled at Cleveland, and adopted a resolution recommending a restriction of production. This recommendation was so far followed or anticipated as to cause the blowing out during the summer of a number of furnaces. Others were blown out for repairs, at various periods during the year, and were not again put in blast. In September the panic came, and it was at once made evident, by the resultant shrinkage in prices and decrease in consumption, that production would have to be still further reduced, and accordingly a number of additional furnaces were blown out, so that, by the close of the year, of 665 furnaces then completed, 252 were out of blast and 413 were in blast. The production of the year was 2,868,278 tons, or 13,720 tons in excess of that of 1872. The year 1874 opened with 413 furnaces in blast, but with a strong hope generally prevailing that the effects of the panic would soon disappear, when a revival of the demand for iron would follow. Of the 413 furnaces then continuing to make iron, it must not be forgotten that nearly every one of the large new and improved furnaces built in 1872 and 1873 was included. Stated otherwise, most of the furnaces then out of blast were furnaces of small capacity. The hopes of a revival of business that were entertained at the beginning of the year were soon found to be delusive, and then began the agitation of the policy of still further restricting production by means of a definite system which should aim at an equitable division of the trade. This agitation proved fruitless, but while it was pending very few furnaces were blown out, while fully as many others, some of which were new, were blown in. It was not until near the close of the year that a general determination to blow out furnaces was reached, and when the year closed, of 701 furnaces then completed, 336 were out of blast and 365 were in blast. The production of the year was 2,689,413 tons, or 178,865 tons less than the product of 1873.

When we consider that the furnaces which made 2,854,558 tons of iron in 1872 were mostly small, and, owing to the excitement and recklessness of those days, not so managed as to produce the best results; when we consider that the lessened number of furnaces which made 2,868,278 tons in 1873 included all the large and improved new furnaces; and when we consider that there were almost as many furnaces in blast in 1874 as in 1873, that as a rule the best furnaces in the country were running in 1874 while the poorest stood idle, and that, from motives of enforced economy, and by reason of increased skill, the management of most of the furnaces in blast in that year was such as to produce the largest possible yield, we need no longer wonder that the production of 1874 was 2,689,413 tons, or only 178,865 tons less than the product of 1873. The result is startling, but it is a revelation that is to be followed by one equally startling.

The quantity of pig iron of all kinds which was on hand and unsold at the close of 1874 in the hands of makers or their agents was 795,784 net tons. The quantity which was held by speculative parties, or was in the hands of creditors, or in the hands of consumers was undoubtedly large; so that, at the close of 1874, the total quantity of pig iron in the country, exclusive of the small stocks of foreign iron, may be safely estimated at 1,000,000 tons. If the country were prosperous; if the demand for iron were equal to the average demand of the past ten years; and if old rails could not be used as a substitute for pig iron, this quantity of pig iron would not have been too large to have in stock at the beginning of this year. But as these favorable conditions did not exist, it is plain that we commenced the year 1874 with far too much pig iron for the good of the trade. Prices could not be expected to improve under such circumstances, and we now see why they have not improved. Although more furnaces have blown out since the 1st of January than have been blown in, the quantity of iron that has been made since then, joined to the 1,000,000 tons then on hand, has been entirely too large to exercise any other than a depressing effect on the market.

We now see how much more valuable to the iron trade the statistics gathered by this Association might be made. Five months have passed since we asked every furnace proprietor in the country for the statistics of his production in 1874 and the quantity of iron unsold at the close of the year. We should have had prompt returns, which would have enabled us to make in January a statement that would have given a clear insight into the condition of the iron trade at that time. But we have had to wait five months for this information, and the country has had to wait for it. Valuable as it is to day, it would have been tenfold as valuable five months ago, for then pig iron makers would have been able to forecast the future with a clearer vision than was otherwise possible.

On the 1st of February, 1874, of 701 completed furnace stacks in the country, there were in blast 303 stacks and out of blast 398 stacks. Sixty-two furnaces were blown out in January. These figures indicate the lowest degree of depression reached since the panic up to that date. Since February 1st the number of furnaces *out of blast* has been slightly increased.

The number of new furnaces completed in 1874 was 38, against 50 in 1873 and 41 in 1872. The astonishing number of 46 stacks is reported to us as being in course of erection in 1875, while other new furnaces are projected.

* Including three spiegeleisen furnaces in New Jersey. † Two furnaces were abandoned in 1874. ‡ Estimated.

The following States made more iron in 1874 than in 1873: Maine, Vermont, Massachusetts, New York, Virginia, Georgia, Alabama, Texas, West Virginia, Tennessee, Ohio and Michigan. The following States made less iron in 1874 than in 1873: Connecticut, New Jersey, Pennsylvania Maryland, North Carolina, Kentucky, Indiana, Illinois, Wisconsin and Missouri. The district showing the greatest increase during 1874 was the miscellaneous bituminous coal and coke district in Ohio. The district showing the greatest decrease during 1874 was the Lehigh anthracite district in Pennsylvania.

Utah Territory made her first pig iron in 1874—200 tons of charcoal. After a long rest, Oregon, with one furnace, made 2500 tons of charcoal iron in 1874. Texas made 1012 tons of charcoal iron in 1874. South Carolina, with eight furnaces, and Minnesota, with one furnace, made no iron in that year.

The production of charcoal pig iron in 1874 was within 1903 net tons as large as that of 1873, being 572,817 net tons in 1874, against 574,720 tons in 1873.

The total imports of pig iron into the United States in 1874 were 61,165 net tons, against 154,708 net tons in 1873, 305,967 net tons in 1872, and 245,535 net tons in 1871.

The total exports of pig iron from the United States to all countries in 1874 were 16,039 net tons, against 10,104 net tons in 1873, and 1477 net tons in 1872.

The Valentine Iron Company, of Bellefonte, Pa., are at the present time enlarging their works, building a new furnace and putting in several new boilers and repairing them in general. They have more orders on hand now than they can possibly fill for some time to come. It was impossible to get along without enlarging, as the demand upon the works had become so great.

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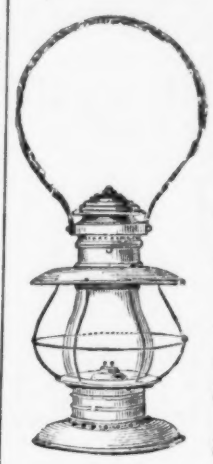

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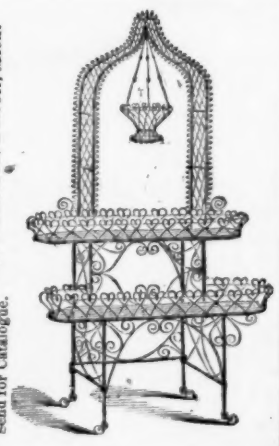

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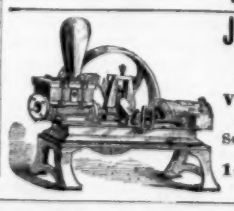

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Water Supply of Towns and Cities.

BY GEN. EGBERT L. VIELE, SANITARY ENGINEER.

Water for the use of small communities is obtained principally from wells; but as the population increases, these wells become unfit for use, and as soon as the number of inhabitants is sufficiently large to warrant the expense, the water is supplied from reservoirs, either artificial or natural, located at a remote distance, where it is allowed to accumulate for general distribution. At first glance it would appear that the latter method would accomplish all that could possibly be desired in furnishing an abundant supply of pure water from a never failing source, free from all the contaminating influences incident to a near proximity to crowded habitations, and yet experience has shown that, in the absence of proper precautions, the more abundant the supply of water the greater are the evils to be feared.

While there are many distinct elements which enter into the discussion of a proper water supply for any locality, it is too often the case that all other questions are subordinated to those relating to cost; and such plans are most likely to receive the popular approval as are the least expensive. It does not, by any means, follow that the most expensive plan is the best. It may be the worst; but, as a general rule, the item of expense is allowed to overshadow all other points.

While it is possible to secure, in many instances, a never failing supply of pure water from remote lakes, yet it cannot be denied that a very large number of our towns and cities have been too heedless in deciding the water question, and have disregarded many important points, involving errors which unfortunately are, from their nature, accumulative.

The usual course of proceeding, in the construction of works for supplying water on a large scale, is to secure, in accordance with legal statutes, the control of a stream of water and the lands necessary for a storage reservoir. A dam is then erected across the bed of the stream, behind which the water is accumulated, to be drawn off for distribution as it may be required. From this reservoir the water is conveyed in conduits to a smaller reservoir, from which the distribution takes place. If the original source is sufficiently elevated, the movement of the water is effected by gravity; if not, steam is used as an auxiliary in its collection and distribution. The most noted water works in America are those of the city of New York, which is supplied with water from the Croton River and its branches.

The course of this stream lies in the counties of Putnam and Westchester, where the irregular character of the topography affords peculiar facilities for the construction of storage reservoirs, of which two have been completed and another is in progress. The first of these, known as the Croton Lake, is situated thirty-two miles from the extreme northerly end of Manhattan Island, and is available for 500,000,000 gallons. From this reservoir or artificial lake the water is conveyed through a close conduit of masonry as far as the Harlem River, and thence through iron pipes and masonry to large open reservoirs in the Central Park, one being 106 acres in extent and another 35 acres; from thence the water is partially distributed, and further conveyed in iron pipes underground to another reservoir of four acres in extent at 42d street and 5th avenue, whence a more extended distribution takes place. The second storage reservoir is situated in Putnam county, and has a capacity of 3,000,000,000 gallons. The water, when required, is conveyed from this reservoir to the Croton Lake through the open natural channels of the river and its branches. Another storage reservoir is in course of construction on the east branch of the Croton, of an estimated capacity of 4,000,000,000 gallons. From this the water is conveyed in the same natural channels as the previous one to the Croton Lake reservoir. On its completion, the total storage capacity will be, including the reservoirs in the city, about 8,000,000,000 gallons. In addition to the reservoirs referred to, locations have been decided upon for others as they may be required, the whole aggregating a supply of 67,000,000,000 gallons. The utmost capacity of the present aqueduct is 115,000,000 gallons, while the daily consumption has been 104,000,000 gallons. These data are cited to show the manner in which large bodies of water are accumulated and distributed, and the description will serve as an illustration of all water works of the same general character of construction.

It is very evident that a large amount of circumspection, not only in the original plans, but in their daily conduct and supervision, is necessary to insure a freedom from impurity and contamination. In the first place, the geological characteristics of the country from which the supply is drawn is an important element to be considered. Water derived from certain formations is almost sure to prove destructive to health, either by reason of an excess of mineral ingredients in solution, which act injuriously upon the system, or in consequence of geological faults and fissures affording passages through which, by infiltration, contamination may be conveyed for long distances. It has been asserted that cholera was transmitted through a large section of the West from the contaminated water which penetrated the fissures of the limestone formation, descending by the force of gravity to the lowest levels, and impregnating the drinking water derived through the stratifications of this rock. Leaving out the geological considerations, and supposing that, by means of careful analysis, the chemical character of the minerals in solution has been determined beyond doubt to be free from objection, we have yet the most important question of all to be decided, and that is the result of a rigid microscopic examination. While this is the real pivot upon which the question of pure water turns, it has been, in a large measure, overlooked, if not absolutely ignored, in the discussions which have arisen out of this subject.

Analytical chemists, both in this country and in Europe, have asserted that the oxidizing process to which organic matter is subjected in running water, is such as to insure a thorough purification, but the theory is based entirely upon the effect which oxygen has upon decomposing organic matter, and is entirely inferential in its character. It cannot surely be maintained that oxygen is destructive in itself of all animal or vegetable germs. If it were so, oxygen, instead of being the great element of life, would be the chief agent of death. All organic matter is but the development of germs, and an infusorial germ which may be in a perfectly healthy and harmless state at certain temperatures, becomes diseased and destructive of health, at a higher degree of temperature. It was remarked by a distinguished American scientist,* who was in London, in 1858, when the Thames River became such a scourge as to fill the whole city with alarm and consternation, that the cause of the calamity was really due to the sudden rise in temperature which took place in the waters of the river, in fact that an increase of 5° F. caused a wholesale destruction of germs, and a consequent putrescence productive of widespread disease.

This element of temperature must be considered always in connection with the accumulation of water in storage reservoirs. The presence of organic germs cannot be ignored. Water in storage reservoirs, derived largely from the drainage of open farming country and incipient villages, is necessarily mixed with leaves, droppings of animals, and other organic impurities. In this condition it is exposed, especially in the hot weather of midsummer, to the direct action of solar light and heat. It is during this season of the year that the rapid development of animal and vegetable organisms takes place from spores conveyed into the water from the atmosphere and the earth, to live, propagate, die and become putrescent.

The constant recurrence of these conditions, more particularly in water which remains at rest or moves slowly, as in lakes, canals and reservoirs, results in an accumulation of living organisms or putrescent matter which renders the water unsuited for human consumption. Even animals suffer from drinking water of this character. Some larval forms living in water have to pass through the stomach of animals before they are known to affect human beings. The *anguillula fluviatilis*, which infests the intestinal canal of fish, is believed to originate the disease called "trichina," which has been so fatal to consumers of pork. Putrescible vegetable matter in drinking water, the refuse of a starch manufactory, has caused the death of cows, sheep and fish.

It is utterly wrong to suppose, as has been stated, that a dilution of 20 parts of pure water, even after running together for some distance, will render contaminated water fit for dietetic use. A much larger dilution than this has been known to produce cholera and typhoid fever. Indeed, the fallacy of such an assertion becomes apparent when it is remembered that a one hundred-thousandth part of yeast, a minute fungus, which the microscope shows to consist of myriads of living cells, or vesicles, when added to a vat of sweet wort, with a marvelous rapidity of growth converts the whole of it into an intoxicating drink; and if the growth of the fungus is not stopped at the right moment, putrefaction sets in, followed by animal organisms that change it into vinegar. The effects of fungus conveyed into the blood circulation, through drinking water, are sometimes of the most startling and distressing nature. The fungus foot disease of India, which is frequently followed by the loss of feet and hands, is due to this cause.

The Damascus sore, a disease that has spread all over the East, is due to a minute vegetable cell that grows with wonderful rapidity, destroying the skin, and ultimately killing the patient. Some of the smaller animalcules found in water are not more than the thirty-thousandth part of an inch in size, and yet one microscopic entozoa which finds its way into the blood will multiply there in thousands.†

The power and the value of the microscope must be fully understood and appreciated in connection with water supplies. Without underrating the importance of chemical analysis, it is nevertheless certain that it is not safe to rely upon it alone. The septic poison of water is undoubtedly due to infusoria, and not to matters in solution. Hence simple analysis fails to reach the difficulty.

This brings us to another branch of this subject which is entitled to grave consideration.

It is well known that within the last few years many large provincial towns and other populous places in England have been compelled to abandon entirely the use of the water of rivers for domestic purposes. This has been in consequence of the impossibility of maintaining the rivers free from pollution in thickly populated sections of country.

The towns and parishes of Plumstead, Woolwich, Charlton, Deptford and Greenwich have abandoned the use of water from the Ravensborne, and resorted to subterranean water for a supply. The town of Hull and its suburbs have abandoned the use of the river Hull. The town of Nottingham has abandoned the use of the Trent. The town of Birmingham has abandoned the use of the river Tame. The city of Canterbury the river Stour. All these, and numerous other cities and towns in England, depend for their supply upon subterranean sources. In view not only of the possibility, but the probability of a similar condition of affairs manifesting itself in this country, in consequence of a rapidly increasing population in certain localities from which supplies of water are now derived, it becomes a matter of importance that the subject of obtaining water from subterranean sources should be understood. The cases where large quantities of water issue from the surface at one spot, so as to be depended upon as a permanent supply for a town, are exceedingly rare, although such instances do exist. There is a spring at Vaucluse, in France, which supplies as much water daily as is delivered into the city of New York by the Croton aqueduct; and there are other places where very great quantities of water issue from the earth.

The true source, however, of a subterranean water supply is found through the means of what are known as artesian wells. Many wells of this character have been sunk in different parts of the United States, some of them to the depth of from 1000 to 2000 feet, obtaining an ample supply of good water. The vast palæozoic basin, which constitutes the greater part of this continent, being composed of successive layers of sedimentary rocks, occupying a generally horizontal position, is peculiarly adapted for supplying water through artesian wells; and whenever the time shall come that the density of suburban population, and the consequent pollution of water supply, requires the abandonment of the modes now generally resorted to, it is very probable that all the water demanded may be obtained from subterranean sources. The greater purity of water from this source, in being always free from the possible contamination of organic matter, would entitle it to a preference over any other. The condition of the water even now distributed in some cities of the United States, to the manifest injury of the general health, demands a careful examination of this question. Jersey City, in the State of New Jersey, is a notable instance. The drinking water of this place is polluted by the sewage of several large towns, and if the use of this contaminated water is persisted in, the population will some day be decimated by a fearful pestilence. Even now it is a dangerous locality for residence. It is necessary that we should look at it from the broadest point of view. We build thousands of miles of railway, whereby all the States of the republic are locked in one vast iron chain of mutual interests and mutual benefits. We construct, with the aid of the public money of the commonwealth, hundreds of miles of canal, for the development of our material resources and the interchange of commodities. Is it not much more imperative that, in the interests of the public health, in the preservation of life that must otherwise be sacrificed, that plans for the supply of water, pure and undefiled, should be devised and executed on a scale which would embrace large sections of territory, supplying small hamlets, growing towns and incipient villages, as well as large cities, in its extended course, bringing to thousands of homes its abundant blessings? That in connection therewith grand *cloacæ* should be constructed, like those of old Rome in its glory, which would be equally effective in removing from whole lines of villages, in its descent to the sea, all the impurities that now endanger health and life? Surely, nothing that we can do for the future is more imperiously demanded than comprehensive plans for preserving the health of the generations which are to follow us. *Salus populi est suprema lex.—The Sanitarian.*

*Prof. A. A. Hayes, of Boston.

†Jabez Hogg, of London.

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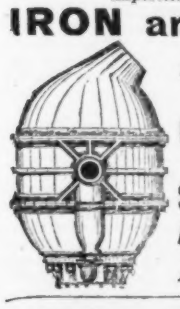
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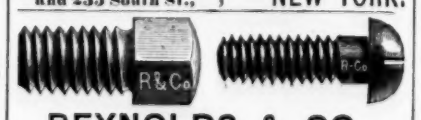

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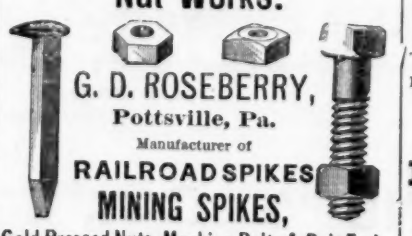
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New Patents.

We take from the records of the Patent Office of Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN OVENS FOR ANNEALING BUILDING BLOCKS OF FURNACE SLAG.

Specification forming part of Letters Patent No. 161,380, dated March 30, 1875, issued to Bassler Boyer, of Lebanon, Pa.

Figures 1 and 2 of the drawings are representations of vertical sections of device.

This invention has relation to means for cooling and annealing building blocks which are made from furnace slag or cinder; and consists in an oven having non-conducting walls, a vertically movable non-conducting cover, and a front which is composed of a number of removable slats.

Hitherto the process of annealing the blocks of slag was conducted by imbedding them in sand, which has been found objectionable for several reasons.

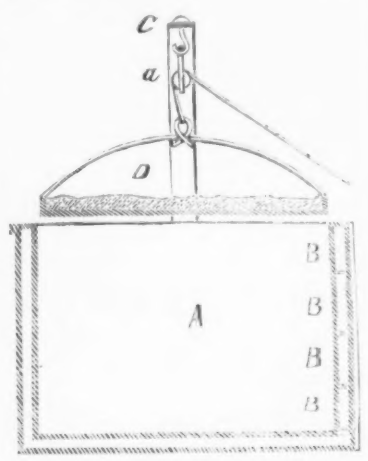

Fig. 1.

In the annexed drawings, A designates a rectangular furnace, composed of three vertical non-conducting walls and a non-conducting floor. The front of this furnace is composed of a number of narrow pieces, B, which are fitted into grooves in the two side walls of the furnace, so that they can be taken out and introduced at pleasure. C designates a frame which is erected over the furnace, and to which a grooved pulley, *a*, is attached. Over this pulley passes a rope or chain, which suspends a non-conducting cover, D, and by means of which this cover can be raised and lowered. Artificial heat is applied to the oven in any convenient manner before introducing the blocks, and when the proper temperature is arrived at the pieces B are removed and the blocks are introduced, layer after layer; at the same time the pieces B are applied, one after the other, and the cover is raised. By these means the blocks are prevented from being suddenly chilled.

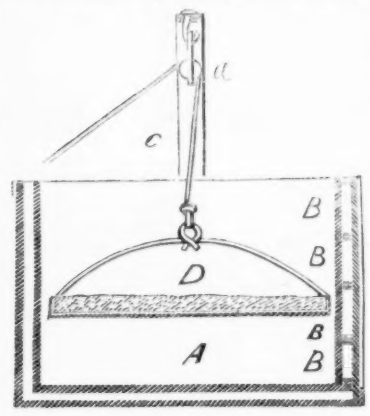

Fig. 2.

Claim.—An annealing furnace having non-conducting walls, in combination with removable pieces B and a vertically movable cover, D, substantially as and for the purposes described.

IMPROVEMENT IN THE MANUFACTURE OF STEEL.

Specification forming part of Letters Patent No. 161,398, dated March 30, 1875, issued to Jean Eyquem, of Paris, France.

Having placed in a fire-clay vessel, properly luted, some iron bars, with pulverized peat, these bars were completely transformed into steel at a temperature of 1300° Fahrenheit, more rapidly than by a mixture of the gases separately produced.

The addition of some one one hundredths of an ammoniacal salt, principally hydrochlorate, would accelerate and render more perfect the conversion of iron into steel.

The rapidity of such transformation is due to the circumstance that the ammoniacal and carbonated hydrogen gases are in the nascent state in the presence of iron, and it is well known how far more energetic the chemical affinities are in that state.

Like results are obtained with the following materials, together with an addition of ammoniacal salt, to wit, tan waste, saw dust, lignite, coal, resins, mineral oils, grease, either solid or liquid hydrocarbons, animal matters, and any other materials supplying carbonated hydrogen; but some of these liquid materials, sometimes rather energetic, cannot be always employed alone, and it is necessary to admix some inert powdered substances.

However, peat is the substance best for use, though its absence may be substituted by the above materials.

The steel produced in this manner is of excellent quality, and can be used without previous preparation to manufacture files, springs, and the like. Worked at a temperature comparatively low, the bars shall not be covered with those rugosities or blisters, by which latter name cemented steel is commonly known (blister steel), and the quality of the iron used does not sensibly influence that of the steel produced.

Use common reverberatory furnaces or large muffle furnaces, into which introduce either fire clay or cast iron chests containing the bars with the cement. A continuous working, the rapidity of the operation, the comparatively low temperature at which the work is effected, the low price of the cement, which has to be but partially renewed, will procure a notable economy over the process in use.

To produce such steel at a cheaper rate, use a reverberatory furnace, preferably Pousard's or Siemens'; but in either case care must be had to produce but reducing flames, less injurious than oxidizing ones.

The operation is as follows: On the hearth charge the scraps, together with the required mixture, which pile up, ramming them down soundly by means of a bat. Then spread over the whole a layer of pulverized slags or scoriæ of same nature. Keep at a red heat for four hours, and raise afterward the temperature to the fusing point.

The preparing of the hearth and the casting process are the same as for the manufacture of puddled steel.

Whether ores or scoriæ are treated, there is no other addition to be made thereto than the slag layer as protection from the flames, as above explained, with reference to scraps.

Claim.—The process, herein described, of converting iron into steel by placing the iron, together with pulverized peat and with an ammoniacal salt, preferably hydrochlorate, into a furnace, and heating, so that the gases given off by the decomposing peat and hydrochlorate will affect the iron.

IMPROVEMENT IN CONVERTING CAST IRON ARTICLES INTO STEEL.

Specification forming part of Letters Patent No. 162,047, dated April 13, 1875, issued to Stanley G. Flagg, of Philadelphia, Pa.

The object of this invention is to convert cast iron objects into steel by subjecting them to heat while they are enveloped in a composition of charcoal, iron scale, or other suitable particles of iron, and sal-ammoniac, as described hereafter.

Care must be exercised in the selection of the cast iron to suit the character of the steel object to be produced by conversion.

For a superior article of steel which has to be hardened, the Lake Superior charcoal iron which has been melted in an air furnace is best, as the latter has a tendency to refine the metal. For a softer and tough steel, not so easily hardened, the cast iron may be melted in an ordinary cupola.

In preparing the composition, use as one of the ingredients, on account of its economy, the iron scale of rolling mills, although iron borings or turnings, or other comparatively small particles of iron, may be used for the purpose. As to the charcoal, that which has been used by distillers for rectifying purposes is cheap and available as an ingredient in the composition. The proportions of iron scale and charcoal may be about equal, while about one pound of sal-ammoniac may be added to every ten or fifteen pounds of the combined charcoal and scale.

These proportions may be varied considerably, in accordance with the quality of the cast iron employed, and in accordance with the bulk of the object; the larger the casting to be converted the more sal-ammoniac is required.

The sal-ammoniac may be finely pulverized, in order to thoroughly mix it with the other ingredients; or the latter may be saturated with a strong solution of sal-ammoniac.

The castings to be converted are so packed in iron boxes with the composition that the latter shall envelop each casting; and after the boxes have been filled they are fitted with covers, which are made perfectly tight by a luting of loam or clay.

The boxes thus charged are placed in an ordinary heating furnace, and there subjected to a nearly white heat for from forty-eight to sixty-nine hours, according to the size of the castings, after which the furnace is permitted to become cool, when the boxes may be withdrawn, and the articles, now converted into steel, may be removed.

Claim.—The process of converting cast iron objects into steel by subjecting them to heat while they are enveloped in a composition of scales or other particles of iron, charcoal, and sal-ammoniac, as set forth.

London, the wealthiest city in the world, is just organizing its first safe deposit company, a thing familiar to every American city. The place of deposit is a little fortress in its way, isolated from other buildings, surrounded by a moat filled with water, like a German robber's castle, triangular, fire-proof, bomb-proof, burglar-proof. The vaults are sunk to great depths, and the doors, without hinges, bolts, etc., are moved by some sort of machinery, and weigh some four tons each.

In removing the spire of a church at Portland, Me., the hermetically sealed copper ball on its summit was opened, and found to contain a variety of odds and ends not altogether of a religious character. It would seem that, before the ball was sealed, the workmen emptied their pockets into it, as among its contents were old newspapers, play bills, pamphlets, political posters, by-laws of a fire company, a wine card, and a variety of other matters hastily deposited there.

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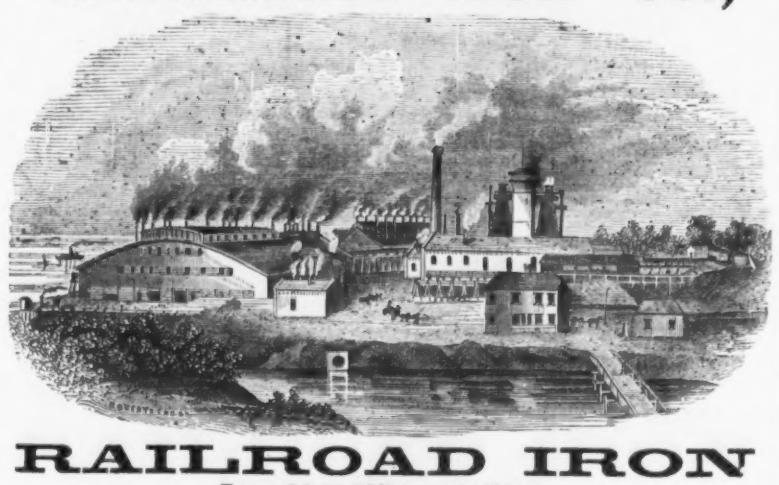

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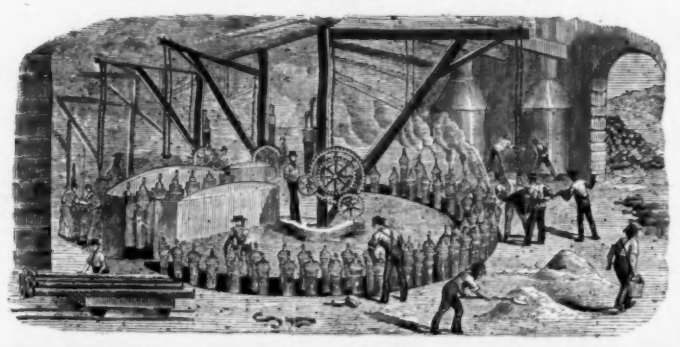

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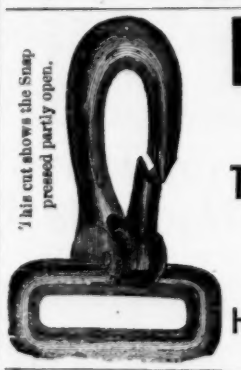

This cut shows the Snap pressed partly open.

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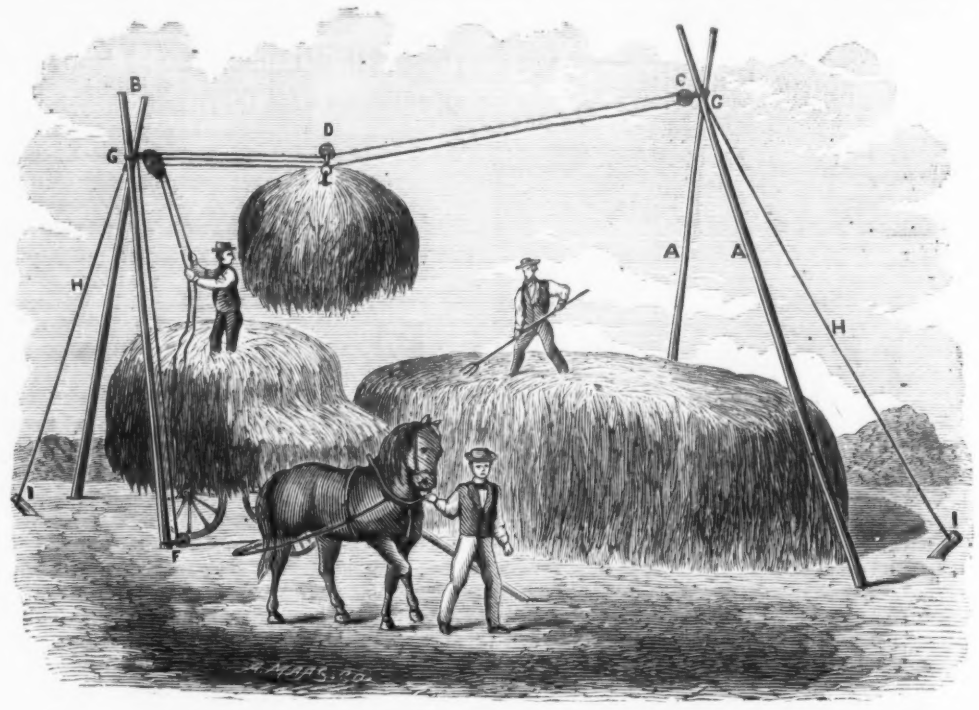
Harpoon Horse Hay Fork.

In the accompanying illustration we show the operation of making a stack with A. J. Nellis & Co.'s harpoon horse hay fork and stacker. Four poles are needed for this arrangement. The two poles AA are from 30 to 35 feet long, fastened at the top with a rope or chain. The poles BB are some 10 feet shorter. They are secured by the guys H and pins I. When put up in a barn the arrangement of pulleys is somewhat the same, the pulley at G being from 5 to 10 feet lower than that at C. This fork has the merit and reputation of being very cheap and durable. The right to use the stacker is given to any one purchasing the harpoon fork. The manufacturers claim that this fork has the best record of any agricultural implement before the public. Further information may be obtained of Messrs. Nellis & Co., Pittsburgh, Pa., who, we are informed, afford to all who may desire it the opportunity of testing



HARPOON HORSE HAY FORK.

the apparatus without expense, believing that its effective and economical operation is its best recommendation.

To Make Lead Pipe Safe to use for Drinking Water.

It is generally well known that lead is more or less acted upon by water, soft water, especially, dissolving more lead than hard water. Water containing sulphates, carbonates, and lime salts in general, have but little action on lead. Dr. C. F. Chandler, in his lecture on water, stated that a gallon of water which had remained six hours in the lead pipes of his residence yielded 0·11 grain of metallic lead. The well known action of lead in producing paralysis and other diseases has induced some persons to dispense with the use of lead pipe entirely, while others have employed it only with fear and trembling. As yet no substitute has been found as cheap, durable and convenient to manipulate, as lead pipe. Such being the case, we would call attention to some of the plans proposed for rendering the pipes incapable of polluting the water, or for removing the lead which has been dissolved. As far as practicable we should choose prevention rather than cure, and endeavor in the first place to protect the pipe from the action of the water. Fortunately there is a method of accomplishing that.

On the 10th of April, 1862, Dr. H. Schwartz, of Breslau, patented a method for preparing lead pipes so that any water, even the purest distilled water, could be conducted through them for a long time without dissolving the slightest trace of lead. This process, described in the *Practical Mechanics' Journal*, November, 1863, p. 120, and in *Dingler's Journal*, clxxi., p. 77, consisted in treating the pipes for 10 or 15 minutes with a 2 to 5 per cent. solution of sulphuret of potassium or of sodium, at a temperature of 212° F. A boiling solution of sulphur in caustic soda is found to answer perfectly.

A strong proof of the insolubility of sulphuret of lead is the fact that water from galena mines never contains a trace of lead. Still, a doubt might arise as to the equal power of the artificial sulphuret to resist the action of water. Fortunately, here, too, we have experimental proof to rely on.

In the *Bulletin de la Societe Chimique de Paris*, Dec. 20, 1873, page 529, we find it stated that Wilm has made a series of experiments with lead pipe coated on the inside with sulphuret of lead, formed by the action of sulphuret of sodium upon the pipe, according to Dr. Schwartz's process. These pipes were exposed, at the same time with other unprotected pipes, to the action of rain water, snow water, distilled water and the city water. On the following day he found a perceptible quantity of lead in the water which ran through the unprotected pipes, except in the case of city water, where traces of lead were found after a few days. For three months, however, and in the presence of air, the coated pipes did not contaminate the water flowing through them.

For the benefit of those interested in Schwartz's process, we would say that the details are given in the specification of patent No. 1519 of the British Patent Reports for 1863.

If we can't keep the lead out of the water, the next best thing is to remove what we can after it is in.

In an exhaustive article on the action of water, especially that of Riga, upon lead pipes, Dr. R. Kirsting* made the following important statement, which, we believe, has never been contradicted:

"*Filtration through Charcoal.*—According to my experiments, 10 pounds of pipe water which contains lead is, by means of a little (6 to 8 grains) broken charcoal, so completely freed from the metal that the filtrate does not show the slightest coloration with sulphureted hydrogen. It succeeds equally well with water containing copper. For household purposes, a vessel holding a few pounds of charcoal, introduced into the pipes above the discharge cock, suffices to perfectly purify the water passing through. A single fillings lasts for months.

Filters of any sort serve to remove a large portion of the lead, for the reason that much of it is present in an insoluble form, either as carbonate or oxy-chloride.

In 1857 Medlock took out a patent in England (No. 186) for the use of iron for removing all impurities from water. This method has been largely discussed, experimented upon, modified, criticised, and finally, we believe, generally abandoned.

On the Action of Calcareous Soils on Wood Impregnated with Blue Vitriol.

It has generally been supposed that the preservative action of blue vitriol upon wood saturated with it was due to the circumstance that the oxide of copper combines with the woody tissue, and especially with the nitrogenous portion of the wood, to form a compound which is at once insoluble, and destructive to organic life. Max Paulet does not consider this explanation satisfactory. He has found that the nitrogenous portions of the wood, whether soluble or insoluble in water, form insoluble compounds with the oxide of copper, but that this compound is not absolutely insoluble in water, especially in water containing carbonic acid. Hence the oxide of copper is gradually leached out of the wood by the water and carried off.

The reaction is not always so simple as this, being usually somewhat as follows: A railroad tie, say of beech wood, which had been impregnated with sulphate of copper, was taken up, after lying for 8 or 10 years in the sand ballast of the road bed, because it was decayed in several places. The decayed portions, which were near the rails, were very dark brown; the wood was not worm eaten, but chemically changed. Although it no longer contained a perceptible quantity of copper, it often contained an enormous amount of iron, which came either from the rails or from the iron used to attach the rails to the ties. It had evidently penetrated the wood while in solution, but is now present in an insoluble form. The decayed wood is soft and friable, and has a specific gravity of only 0·380, while that part of the tie which is still sound has a specific gravity of 0·755. It still contains a nitrogenous substance and dissolves completely in caustic potash, like ulmic acid. When treated with nitric acid, carbonic acid is liberated, and the nitric acid dissolves lime and a large quantity of oxide of iron. The evolution of carbonic acid is as strong as if we were treating an impure carbonate; the author obtained 10½ c. c. carbonic acid from 0·250 grains, or 0·66 c. c. of the decayed wood. When burned this rotten wood left 3 per cent. of ash, while normal beach wood leaves but half as much. Those portions of the decayed wood not near the rails did not contain so much oxide of iron, but carbonate of lime was abundant in all parts of the decayed wood.

Hence we see that carbonate of lime contained in the road bed, and dissolved by water containing carbonic acid, penetrates the wood, replacing the copper, which is gradually, and at last completely, driven out from its compounds in the wood. The amount of decay which the wood had suffered was directly proportional to the quantity of carbonate of lime it contained. The latter does not itself cause the wood to decay, but drives out the preservative which would prevent decay. Next, the oxide of copper being compelled to relinquish its union with the albumen of the wood, is dissolved by the carbonic acid in the water, and finally leaves the wood entirely. Carbonate of ammonia, brought down by the rain or proceeding from the decomposition of organic matter contained in the road bed, acts as solvent for the copper, but is only present in small quantities.

Although Paulet says that the copper is expelled by carbonate of lime, he also states in another place that it steps in between the preservative and the substance to be preserved, so that the latter is no longer protected from the action of destructive agents. However this matter may be explained, it is at all events evident that wood impregnated with blue vitriol, or sulphate of copper, does not last well in soils that contain much lime.

* Dingler's Journal, clxix., p. 199, 1863.

Steel Rails for California.

It is gratifying to know, says the *Bulletin of the Iron and Steel Association*, that the Pacific coast, which has never felt the effects of our great panic, is coming to the rescue of the Eastern iron trade. Recently the Southern Pacific Railroad Company, of California, contracted with the Pennsylvania Steel Company and the Bethlehem Iron Company for 10,000 tons of steel rails—5000 from each company—to be used in continuing the line of the road south of Los Angeles, in the direction of Fort Yuma, the southern terminus of the road, at the junction of the Colorado and Gila rivers. The distance by rail from San Francisco to Fort Yuma is 722 miles. At Fort Yuma the Southern Pacific will connect with the Texas Pacific (Col. Scott's road), and farther north, at Fort Mohave, on the Colorado River, another Eastern connection is expected to be made in time. The steel rails ordered are to weigh 50 pounds to the yard, and the quantity ordered will lay 100 miles of single track, including sidings.

The rails will be shipped to Jersey City by rail, and thence by sailing vessels around Cape Horn to San Francisco. The freight from Jersey City to San Francisco will not exceed $10 a ton, and is expected to be a dollar or two less. The rails will serve admirably as ballast for light cargoes.

We hope that this transaction may be but the beginning of a large trade in steel rails and iron and steel products generally between the East and the Pacific coast. The States and Territories of the Pacific slope consume annually about 300,000 tons of iron in all forms, and until they are ready to make their own iron and steel it would certainly be wise for them to buy their supplies from sister States rather than from foreigners. They will thus save money and be better served. Heretofore California has been a large importer of iron and steel products. In the fiscal year ended June 30, 1874, her imports of these articles aggregated $1,555,000.

Brevity.—Lighting fires with kerosene and getting blown up in consequence, is such a common occurrence in the West that the newspaper reporters are tired of telling the story in detail. One of them condenses a bit of sadly tragic history into the following brief announcement, which, it must be confessed, tells the whole story:

Elizabeth Jane Folk—age fourteen—fire—coal oil—funeral—Kutztown, Berks county.

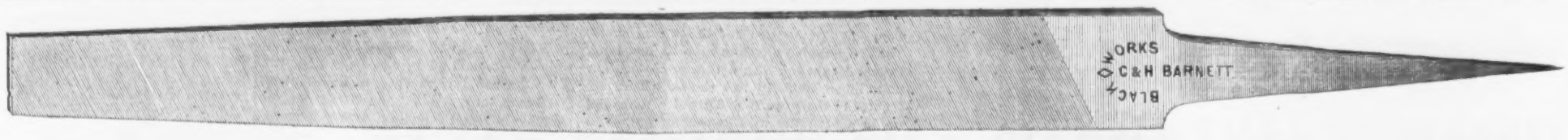
Another Western paper chronicles a similar event as follows:

Mrs. Mary Smith, of Burnetsburg, lighted her fire with kerosene on Monday morning. Her coffin was beautifully studded with brass nails.

Still another paper adopts the following style of announcement:

A little daughter of Mr. Herman Schroeder, of Cairo, poured coal oil in the cook stove yesterday to help the fire kindle. Notice of funeral hereafter.

The last Legislature of Nevada voted an appropriation of $25,000 to put an iron fence around the "plaza" at Carson, the capital city. The authorities advertised for bids from contractors, and when these were opened the lowest offer was found to be that of the lady principal of the leading school in town. She had written to this State, and having learned the cost of manufacture and transportation, knew what she was about. The authorities gave her the contract, much to the annoyance of her male competitors.



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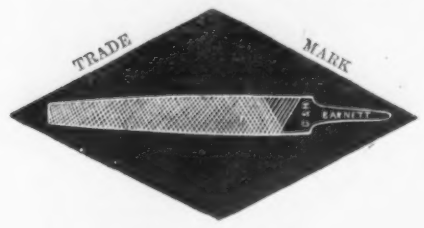

PRICE LIST.

BLACK DIAMOND FILE WORKS.

G. & H. BARNETT,

39, 41 & 43 Richmond Street, PHILADELPHIA.

SOLE AGENTS:

LINFORTH, KELLOGG & CO., 3 & 5 Front St., San Francisco, for the Pacific Coast.
SEMPLE, BIRGE & CO., 13 South Main St., St. Louis, Mo.

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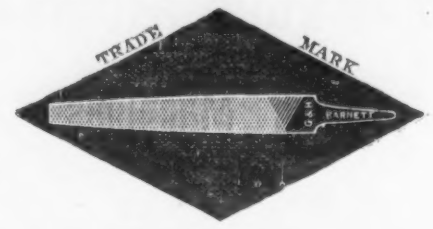

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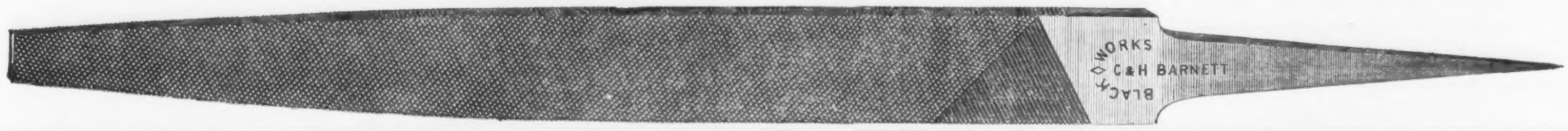


USE THE BEST.

Pawtucket, R. I.

The American File Company have the exclusive right to use the Bernot process for cutting files By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing files and steel.

Goods of all known manufacturers have been repeatedly tested, and interesting tables have been compiled showing the working qualities of files made by different makers, and of files made from different steels, and with various shapes and angles of tooth They have thus reduced the manufacture of files to an exactness and perfection with a uniformity of result, as they believe, never before attained. No file, foreign or domestic, that they have ever tested, has equalled the performances of their own goods taken at random from their stock. Their machines are capable of the most delicate adjustment, and can produce the very finest work known to the trade. Special files made to order. Prominent file manufacturers are having their best goods from our works.

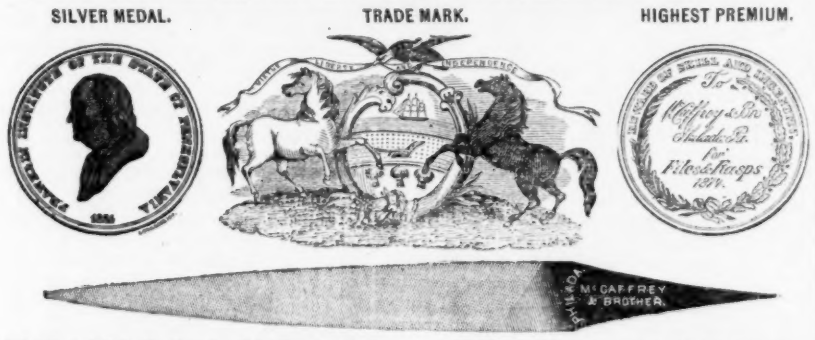
Price lists and information furnished on application.

AMERICAN FILE CO., Pawtucket, R. I.

THE BEST IS THE CHEAPEST.

McCaffrey's Standard American Hand Cut Files and Rasps are warranted to do more work than any other files and rasps in the market.

SILVER MEDAL. TRADE MARK. HIGHEST PREMIUM.



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No. 1732, 1734 & 1736 North Fourth St., Phila.

Messrs. ARNOLD & CO., 310 California St., San Francisco. Sole Agents for the Pacific Coast.

Machinery without Lubricant

METALINE.

Machinery Metalined, or Metaline furnished to Machine Builders.

No oil or attention required. Runs with little or no wear. No dirt or danger from fire. No damage to goods in process of manufacture. Years in use by best concerns, who are refitting old, and ordering new machinery to be metalined.

AMERICAN METALINE COMPANY,

61 Warren Street, New York City.

JOHN I. BROWER & SON,

Hardware Merchants,

288 Greenwich Street, NEW YORK.

HORSE SHOES.
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HORSE NAILS.
Putnam's,
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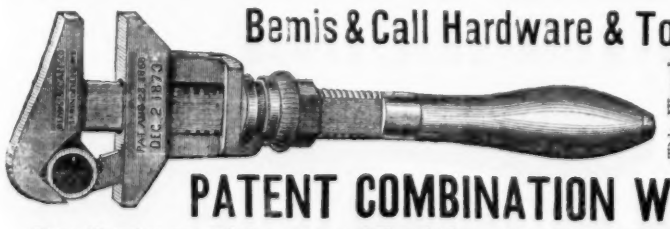

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This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-Hardened throughout, and not only combine all of the superior qualities of our cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a Combination which has no equal. For Circulars and Price List, address,

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

L. B. HELLER. I. R. DENMAN.

L. B. HELLER & CO.,

Manufacturers of Celebrated

American Horse Rasps and Files.

OFFICE, 190 Market Street,

P. O. Box, 223. NEWARK, N. J.

ELIAS G. HELLER. GEO. E. HELLER.
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For the information of persons unacquainted with our goods, we will state that every

FILE OR RASP

manufactured by us since our establishment in 1866, has been stamped "Heller & Bros.," though commonly called the "Heller Rasp."

All Rasps not stamped as annexed diagram are not the original, genuine article. The trade will please notice the addition to our trade mark, which was formerly a horse, and is now changed to the trade mark represented by the cut.

W. C. DUYCKINCK,

Importer and Manufacturer of
Steam Water Gauges,
Pipe and Fittings,
Scotch Glass Tubes,
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Twist Drills,
Emery Wheels,
Pipe Fitters' Tools,
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Forges,
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Wheelbarrows,
Wrenches,
Jack Screws,
Vises,
Flue Brushes,
Waste,
Belting,
Hose,
Packing,
Stubs' Goods,
Hair Felt,
Polishing Felt,
Emery Cloth,
Hand Drills,
Iron Punches,
Iron Shears,
Files,
Governors,
Bolts,
SEND FOR PRICE LIST.

Railroad & Machinists' Supplies.

50 and 52 JOHN STREET, NEW YORK.

Clement & Hawkes Mfg. Co.,

Manufacturers of

SHOVELS,

Planters' Hoes, Trowels and Machinery.

Northampton, Mass.

Send for Circular and Price List.

FLUOR SPAR

In Lump, Crushed, Ground, or extra fine, for sale by pound, barrel, ton or car load, by

SCHWEITZER MFG. CO.,

57 Reade St., N. Y.

STEAM GOVERNOR
WARRANTED BEST IN USE.
ADDRESS HUNTOON GOVERNOR CO. LAWRENCE MASS.

Established 1816.

Peter A. Frasse & Co.,

95 Fulton Street, New York,

SOLE AGENTS FOR

Thomas Turner & Co.'s Suffolk Works,

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FILES AND HORSE RASPS,

And Importers of

P. S. STUBS' FILES, TOOLS & STEEL,

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EVERY FILE WARRANTED.

Equal to the

BEST.

Western Files. Western Files.

Works, Beaver Falls, Pa. Office, 96 Chambers St., N.Y

Western Files. Western Files.

LARGEST CAPACITY

Of any File Works in the World.

In the face of strong prejudice against American files, this brand has earned a reputation second to none. The trade in all sections testify to their excellence. We confidently offer these files as superior in every respect and cheaper than any first-class file in the market. A trial will confirm their reputation.

MINOT & CO., 239 Franklin St., Boston, New England Agents.

FILES AND RASPS.

XTRA QUALITY,

MADE FROM THE BEST

IMPORTED STEEL,

BY THE

Auburn File Works,

AUBURN, N. Y.

JOHN ROTHERY'S Celebrated Hand-Cut FILES,

Made of Best English Cast Steel.

WALSH, COULTER & FLAGLER, Sole Agents,

83 Chambers and 65 Reade Streets, N. Y.

BEST HAND CUT FILES.

Warranted Superior Quality.

SAGER ASHWORTH & CO., Lowell, Mass.

SEND FOR PRICE LIST.

BUSINESS ITEMS.

PENNSYLVANIA.

The new steel casting works of Hussey, Dravo & Co., recently built at their new location on the South Side, Pittsburgh, are in successful operation, and they are filling orders for railroad castings, and for a variety of machinery.

The work of putting up the building for the new steel works at Beaver Falls is going forward with much vigor.

Heavy orders for car wheels and axles which are being shipped to South America are on hand at the Lehigh Car Wheel and Axle Works, below Fullerton.

The iron manufactories of Erie employ $1,349,000 capital, 965 men, and produce annually $3,628,000. Brass foundries—capital, $310,000; men, 180; annual product, $140,000. Stove foundries—capital, $375,000; men employed, 190; annual product, $475,000. Car manufactories—capital, $260,000; men employed, 625; annual product, $600,000.

Brady's edge tool factory has been removed from Mount Joy to Lancaster, where improved machinery will be introduced. It was established in 1805.

CONNECTICUT.

The Washburn steel rim car wheel, which has stood last winter's tests so finely, will be manufactured in large quantities at Hartford, beginning one week hence, to supply the New York Central Railroad.

The Winchester Arms Company, of New Haven, has received an order from the Turkish government for 80,000,000 cartridges, which will keep the company busy for about a year.

VERMONT.

There were 4747 scales manufactured at the Fairbanks, St. Johnsbury, scale works during the month of April, which is 977 more than during the same time in 1874. The company are now filling a large order to be sent to Moscow and St. Petersburgh, Russia.

NEW HAMPSHIRE.

The Concord Axle Works of D. Arthur Brown & Co., at Fisherville, are now crowded with orders. They are employing more men and turning out more goods than ever before. They are just putting in the foundations for another building 64x24, the present shops being over crowded. Some new machinery is also being added, which includes one special tool imported from England.

MASSACHUSETTS.

The National Needle Company, Springfield, employ 90 hands, and turn out 20,000 needles a day, making largely for the Remington Sewing Machine Company. They have been organized two years, and own about $75,000 worth of special machinery, having lately bought out Cook & Porter, of Newtonville.

B. F. Mullin, of Holyoke, is manufacturing three 80 horse-power boilers for the lunatic hospital at Northampton, and one for S. Snell & Co. The three City Hall boilers are nearly completed. One large 9 ton bleach boiler is being made, which is to go to San Francisco, Cal.

The Swain Turbine Company, of Lowell, are building one of their large size case wheels for the Great Falls Manufacturing Company, of Great Falls, N. H. This is the third wheel this Company have furnished the Great Falls Corporation.

The contract for the rebuilding of the section of the Newburyport bridge carried away by the flood, 204 feet in length, has been awarded to the Watson Manufacturing Company, of Paterson, N. J., for $1949. The bids on building the piers for the draw are yet to be awarded.

The Domestic Needle Works, Brockton, is one of the oldest concerns in the country. They are now running full time with 43 hands. They turn out about 12,000 needles per day, and are sending them all over the country. They are now putting in new machinery for finishing. A New York party lately ordered 340,000 needles, but the order was refused on account of inability to fill it. Needless for all kinds of sewing machines are turned out by the firm.

OHIO.

The King Iron Bridge and Manufacturing Company, Cleveland, have contracted to build over 9800 feet of wrought iron bridges since January 1, 1875.

The two Ferrie blast furnaces and their machinery, of the Etna Iron Company, Ironton are almost completed. Their entire appointments are of the most perfect character.

The Sandusky Machine and Agricultural Works manufacture threshing machines, corn shellers, horse-powers, steam engines, wine and cider presses, &c. Employment is given to 30 hands.

The Canton Bridge Company has been awarded the contract to build the new county bridge between Etna and Sharpsburgh, near Pittsburgh.

Three hundred men are employed at the steel wire mills of the Cleveland Rolling Mill Company in the 18th Ward, and 500 tons of wire are made per month.

The Co-operative Stove Company, Cleveland, are employing 40 men, making six tons per day of their rotary soft coal base burning heater, in anticipation of next fall's trade.

KENTUCKY.

Pennsylvania Furnace, Greenupsburg, has gone into blast. There are on hand nearly 4000 tons of choice ore, and the coal house is full of good charcoal. The hot blast and boilers, which caused some trouble last year, have been thoroughly repaired, and the furnace is now in good condition.

TENNESSEE.

The Vulcan Works, at Chattanooga, will probably be sold some time during the coming summer. The sale will be subject to two mortgage liens, amounting in the aggregate to about $100,000, and will probably result in the works being purchased and put in operation by the holders of these liens.

ALABAMA.

Round Mountain Furnace is doing splendidly, making 12 tons per day of No. 1 pig iron. Some changes have recently been made in the machinery.

CALIFORNIA.

At the Miner's Foundry, San Francisco, they are making six drills for the Diamond Drill Company, in that city. They are also making two steam engines for service at the Comstock mines.

MICHIGAN.

The Marquette City steam forge is running at present on an order for car axles from the Chicago and Northwestern Railway Company. The proprietors are expecting orders that will keep them busy all summer.

The Coal Supply of the Pacific Coast.

The San Francisco *Bulletin* says: Nothing, perhaps, gives a stronger assurance of the future prosperity of the Pacific coast than the discoveries of coal which are made. If the formations here are not entirely the same as those of Pennsylvania and Europe, but partake of the lignitic character, they have been abundantly tested for the purpose of fuel, and with satisfactory results. Nor is this lignitic formation confined to one particular section of the Pacific coast, but it is found in various degrees approaching anthracite, from British Columbia to the Gulf of California. Pacific coast coal is now almost exclusively used for railroad locomotives and for steamboats by the companies operating here, and for all classes of manufactures. Cheap fuel is the basis of great manufacturing interests, and in this respect the new industries of this coast have brightening prospects.

Coal is said to be practically inexhaustible on Vancouver's Island, and the Nanaimo coal fields are sending large quantities to the San Francisco market. The company is now represented as taking out about 300 tons per day from the old bed, three miles from the harbor, and their mine is down 1200 feet. A new vein has also been discovered about half a mile from the harbor, and when this is opened the supply will be increased to 500 tons daily. The present price of this coal delivered at the shaft is stated to be $5·25 per ton.

Coming southward, there is next the Bellingham Bay mine, which is taking out 100 tons daily, and the present vein is expected to last four years. The Skagit mine, also in Washington Territory, has only been opened for 20 feet, simply for testing its value. The mines around Seattle are turning out from 200 to 400 tons daily, and this can be indefinitely increased with better means of transportation to tide water. The new mines of Puyallup, 28 miles from Tocoma, are also developing the existence of a large area of coal, and a project is on foot for constructing a narrow gauge railroad to bring the coal into market.

The Coos Bay coal fields, of Oregon, are rapidly developing, and coal of lesser commercial value is constantly being discovered in other sections of that State.

In Nevada two important discoveries of coal have been made during the last 12 months—the Pancake mines and those in El Dorado canyon, Lyon county. The latter has been tested for steam purposes at the mines on the Comstock lode, and the proprietors are arranging for the construction of a narrow gauge railroad from the canyon to Virginia City.

Coal also exists in several sections of California. In Shasta county one of the largest beds on this side of the continent has recently been discovered. A few months ago extensive deposits were found in Monterey county. The Lincoln mine in Placer is developing, and two narrow gauge railroads are to be constructed to the coal fields of Ione Valley in Amador county. Coal is also reported to have been found in Butte and Colusa counties, and only awaits means of transportation to bring the same into market. The prime factor in all manufacturing enterprises is coal, and from today's outlook, the encouragement to enter upon manufacturing enterprises was never greater than at present.

Steel and Iron in Ottawa.—The (Canada) Ottawa *Citizen* says: It is gratifying to know that the ore from the Haycock mines has once more startled the iron world with its richness. The specimens sent over to Plattsburgh were put through a forge similar to those now being erected at the mines, and a magnificent steel billet was the result. The billet was subsequently sent to Montreal and rolled into thin bars, which have been bent cold without the slightest appearance of a fracture. This quality of the steel in particular created quite an excitement among the iron manufacturers who witnessed the operation, and many of them expressed themselves astonished at the result. Another prominent feature is that the ore from the Haycock mines is very easily smelted, taking only one hundred and forty bushels of charcoal to the ton, while ordinary ore takes two hundred and forty bushels. This is indeed a wonderful saving in the manufacture. Mr. Washburn, one of the oldest axe manufacturers in Canada, stated this morning that he never saw anything to equal the specimens shown by Mr. Haycock, and has decided to test its quality for the manufacture of axes.

A remarkable specimen of ivory veneering has been produced by Messrs. Pratt, Reed & Co., Deep River, Conn. They have recently succeeded in cutting a sheet of ivory 25 feet long and 10 inches wide. This was cut around the tusk from a section 10 inches long, the section being 7 inches in diameter. The cutting was performed by a circular saw. The sheet would have been 35 feet in length had it not been for a natural defect in the tusk, which caused it to separate after 25 feet had been obtained.

GEORGE GUEUTAL & SON,

39 West 4th St., New York.

IMPORTER OF

Wood Screws, Steel in Sheets,

BAND SAWS, TOOLS FOR BRAZING, &c.

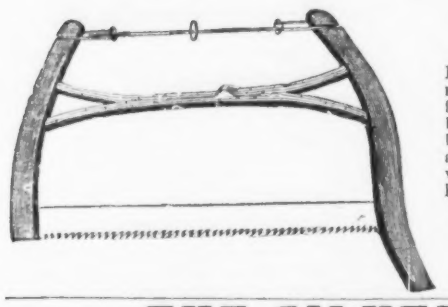
Bed Screws, Pin Hinges, and Wire Nails a Specialty.

H. W. PEACE,

MANUFACTURER OF

Saws of all kinds.

FACTORY, WILLIAMSBURGH, N. Y.



Elliptic Forked Saw Frame.

Patented June 28th, 1870.

The annexed engraving represents my ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,
Sole Proprietor & Manufacturer,
VULCAN SAW WORKS.
WILLIAMSBURGH, N. Y.

THE SILVER STEEL DIAMOND CROSS-CUT SAW.

$1.50 Per Foot.

Patent Secured

PATENT HANDLES AND GAUGE INCLUDED.

THIS new Saw, which is destined to take the place of all Cross-cut Saws in point of **SPEED AND EASE**, is manufactured by **E. C. ATKINS & CO., Indianapolis, Ind.**, who are the

SOLE MANUFACTURERS FOR THE UNITED STATES.

So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled.

E. C. ATKINS. H. KNIPPENBERG.

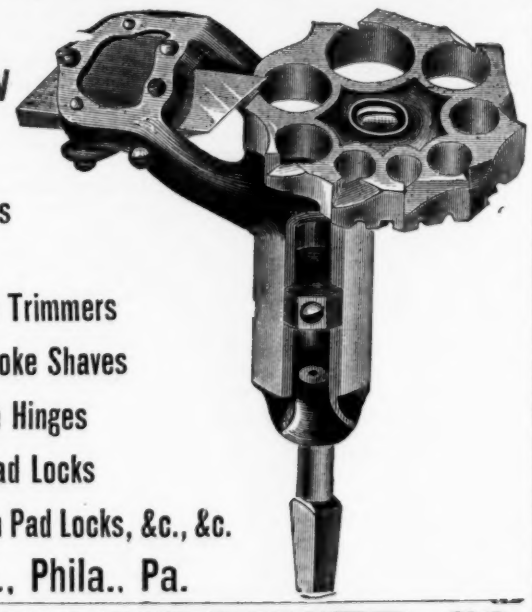
E. C. ATKINS & CO.
Saw Manufacturers and Repairers, Indianapolis, Ind.

Lloyd, Supplee & Walton,

HARDWARE FACTORS.

MANUFACTURERS OF

Bonney's Hollow AUGERS.



Stearn's Hollow Augers and Saw Vises

Bonney's Spoke Trimmers

Double Edge Spoke Shaves

Adjustable Gate Hinges

Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila., Pa.

BILLINGS & SPENCER CO.

MANUFACTURERS OF

CLAMP, DIE AND COMMON

LATHE DOGS.

Vienna, 1873.

Forged from Bar Steel *And Hardened*

Under Billings's Patent Process.

For Progress.

FIRST CLASS ARTICLES,

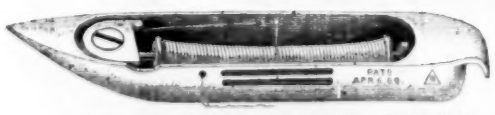
and something that every machinist and Tool Maker will appreciate.

Also, all Descriptions of **Wrought Iron & Steel**

DROP FORGINGS.

For Machine Handles, Lathe Wrenches, Spinning Rings, Marlin Spikes. Clinch Rings, Thumb Screws, Thumb Nuts, and Parts of Drill Chucks, Sewing Machines. Guns, Pistols, and

Machinery Generally.

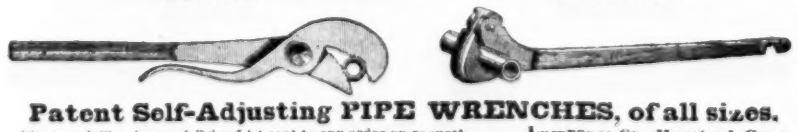


TRADE B MARK.

THE BILLINGS PATENT SEWING MACHINE SHUTTLE,

Thirty Varieties now made, Forged Solid from Bar Steel and Cold Pressed. Also,

Barwick Wheatcroft



Patent Self-Adjusting PIPE WRENCHES, of all sizes.

Illustrated Circulars and Price List sent to any order on request. Lawrence St., Hartford, Conn.

E. M. Boynton,

80 Beekman Street,

NEW YORK,

Manufacturer of

Saws of all kinds.

Also Sole Manufacturer of

LIGHTNING SAWS.

Two Direct Cutting Edges, instead of one Scraping point.

Note extra steel and durability over the old **V**, outlined on **M** tooth.

Telegram Dated Oct. 1st, 1874.

STATE FAIR, EASTON, PA.

To HENRY DISSTON & SONS:

Philadelphia, Pa.

I want you to publicly test that challenge on Cross Cut Saws. Name time and place within thirty days. American Institute preferred. E. M. BOYNTON.

E. M. Boynton gave on Wednesday of last week an exhibition of what his Lightning Saw could do at the Pennsylvania State Fair, in which two men sawed through a sound oak log, 16 inches in diameter, in 17 seconds. Mr. Boynton informs us that his export trade is increasing, he having lately made large shipments of his saws to Australia and other distant markets.—*The Iron Age*, Oct. 8, 1874.

For fuller report of this exhibition see the *Easton Morning Dispatch* of Oct. 1st, 1874.

Henry Disston & Sons cannot furnish Lightning Saws. Why do they imitate mine?

J. FLINT,

Manufacturer of

ALL KINDS OF

SAWS

And Plastering Trowels,

ROCHESTER, N. Y.

A large Stock of **Cross Cut Saws** constantly on hand. Orders filled promptly. **Dietrich's Double Handle One Man Cross Cut Saw** made with any kind of tooth desired. Our patent method of grinding Hand Saws makes them superior to any in the market.

Send for Illustrated Price List.

Putnam's Government Standard

FORGED

HORSE SHOE NAILS.

Manufactured from the best of **NORWAY** Iron, nd warranted to give entire satisfaction.

S. S. PUTNAM & CO.,
NEPONSET, MASS.

Rogers' Self-Sharpening HOE.

The best Hoe in market. It will not batter or break. Wears itself sharp. Will last twice as long as any other Hoe, and is warranted to cut the "Bolles Hoe" or any Hoe in market.

For Sale at Manufacturers' Prices by

RUSSELL & ERWIN MFG. CO., - - New York.
BYRNE & FITZSIMONS, - - - - Albany, N. Y.
KENNEDY, SPAULDING & CO., - - Syracuse, N. Y.

JULIEN CHURN

AND

Butter Worker.

Hardware and Agricultural Implement dealers are offered in the above an article that is now a staple in the trade, having been sold the past eight years from the Atlantic to the Pacific. It is correct in principle, and manufactured in the most substantial and handsome manner.

Send for a Descriptive Circular.

Wholesale Agents:

H. B. GRIFFING, - - - - Cortland St., N. Y.
WOODFORD & CHAMBERLAIN, Cleveland, O.
WILLIAM BLAIR & CO., - - Chicago, Ills.
JOHN NAZRO & CO., - - Milwaukee, Wis.
MOODY, WOOTTON & CO., - - Louisville, Ky.
SEMPLE, BIRGE & CO., - - St. Louis, Mo.
W. C. CHAMBERLAIN, - - Dubuque, Iowa.
BATTELL & COLLINS, - - Quincy, Ills.
BAKER & HAMILTON, - - San Francisco, Cal.

Stretches the wire each way, is tightened with a common wrench, is self-fastening at each half turn of the spindle. Warranted for strength and durability. Sold at hardware stores generally. Byington & Northup, sole manufacturers, Rochelle, Illinois.

Agents: Hibbard & Spencer, Chicago; Excelsior Mfg. Co., St. Louis; John Nazro & Co., Milwaukee; George Tritch Denver; Nelson & Co., Burlington, Iowa.

WHEELER, MADDEN & CLEMSON,

Manufacturers of Warranted Cast Steel

SAWS

of every description, including

Circular, Shingle, Cross Cut, Mill, Hand, Roberts' and other Wood Saws,

&c., &c

Cast Steel Files

of the well known brand of

Wheeler, Madden & Clemson.

FACTORIES:

Middletown, Orange Co., N. Y.

BRANCH OFFICE:

97 Chambers Street, New York.

BRUNDAGE FORGED HORSE NAILS,

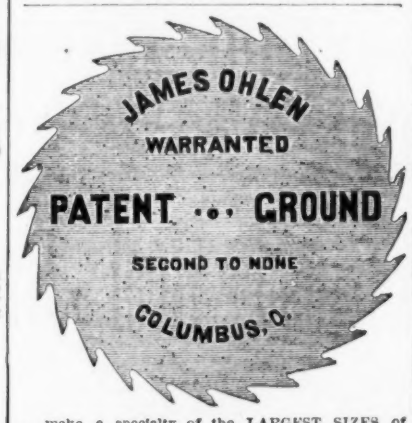
Manufactured from

BEST NORWAY IRON,

by BRUNDAGE & CO. Sold by

WHEELER, MADDEN & CLEMSON

Middletown, Orange Co., N. Y.



make a specialty of the LARGEST SIZES of **Circular Saws,** and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted over *twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated **"Challenge" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

JAMES OHLEN.

V. G. HUNDLEY, Agent,
79 Reade St., N. Y.

NORTH CAROLINA HANDLE CO.,

(Wilson & Shober, Props.)

Manufacturers of

AXE, PICK, GERMAN & AMERICAN SLEDGE, and other Handles.

Full assortment always on hand.

VAN WART, SON & CO.

Hardware Commission Merchants,

BIRMINGHAM, - ENGLAND,

Agents,

VAN WART & McCOY,

134 & 136 Duane Street, N. Y.

George H. Gray & Danforth,

48 India Street, Boston.

F. W. TILTON,

17 Old Levee Street, New Orleans.

At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for

John Rimmer & Son's Celebrated Harness and other Needles.

Agents for

Seydel's "Ashantee" Pocket Hammock

OSCAR IRVING VAN WART & Co.,

FORWARDING AGENTS,

2 South John Street, LIVERPOOL.

OVER 28,000 IN USE.

The Best for Practical Purposes.

SEVEN SIZES.

For Sale by Hardware Dealers generally, and by the Makers,

GRAHAM, EMLEN & PASSMORE,

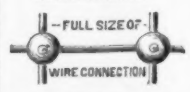
631 Market St., Phila.

JOHN MAXHEIMER,

Patented,

June 3, 1862; April 6, 1869; Dec 23, 1873; Jan. 20, 1874; Dec. 22, 1874.

Manufacturer of



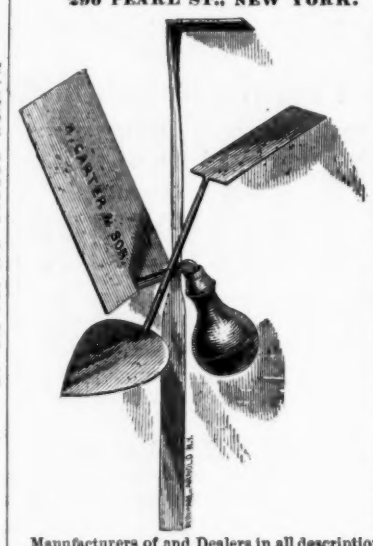
JAPANNED and PATENT EUREKA Bright Metal

BIRD CAGES.

Nos. 247 & 249 Pearl Street
NEW YORK.

H. CARTER,

290 PEARL ST., NEW YORK.



Moulders' and Plasterers' Tools.

Manufacturers of and Dealers in all descriptions of Moulders and Plasterers' Tools, and Dealers in General Hardware, Gilded Copper Weather Vanes, CARTERS' PATENT CARRIAGE LIFTING JACK, &c

J. CLARK WILSON & CO.,

American and Foreign Hardware Commission Merchants,

81 BEEKMAN STREET, N. Y., Sole Agents for

Massachusetts Screw Company's

PAT. GIMLET POINTED IRON & WOOD FLAT HEAD SCREWS.

Superior in quality and finish to any in the market. Put up in double green boxes.

MILLER'S IMPROVED EGG BEATER.

J. CLARK WILSON & CO., Sole Agents.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, June 6, 1875.

The industrial public had just begun to congratulate itself on the practical end of the coal strike when fresh troubles broke out in the Schuylkill region; the miners who had resumed work were attacked by an armed mob, driven from their collieries, and so great violence was committed as to necessitate again calling out the military. At Mahoning City the greatest outrages were committed; here an armed body of 500 or more came in collision with the sheriff's posse and a pitched battle took place, in which quite a number of men on each side were shot. After the arrival of the military this mob dispersed, but later placed obstructions on the railroad to throw off trains transporting troops, and made an attack on the operatives of another colliery, driving them off and burning the breaker and trestlework round the mines. Since this, matters have been more quiet under the presence of the military, and the various branches of the Schuylkill union are voting on a proposition from the miners of Wilkesbarre and Luzerne to allow the latter to go to work on the 10 per cent. reduction, and to support the miners of the Schuylkill Basin, whom, if they resume, must do so at a reduction of 20 per cent. This plan was adopted as the settlement of a previous strike. The Wilkesbarre miners resumed first under a similar promise to the Schuylkill men, and the most turbulent portion of the latter having left and obtained work in the Wilkesbarre region, the more respectable miners of Schuylkill went to work. In addition to the interruption of business by the strike, the Reading Railroad Company has several other irritating affairs on hand. The Legislative Investigating Committee shows, in the testimony of the retail coal dealers, a very bitter spirit of antagonism to the coal company, and one which may, in time, cause much trouble. Beside this, the Survey Committee of Councils has refused to recommend the vacating of certain streets, which is required to enable the company to finish its iron ship yard and ore depot in Kensington, on the Delaware River front. Here, according to President Gowen, it was the intention of the company not only to erect a large ship yard for the erection of iron colliers, but to make a depot for the reception and distribution of iron ores and all heavy business. This, he estimated, would give employment to several thousand men, and add greatly to the taxable value of real estate in the neighborhood. The ordinance was defeated in committee by a single vote, however, and Mr. Gowen declined an amendment restricting the company's privileges. It is stated that, should the report of the committee be affirmed in Councils, the Reading Company will transfer their dry dock, ship yards, plate mill and ore business to Chester, where they have large tracts of river front, beside direct rail connection.

Centennial matters have been brightened during the week by the arrival of the Chief of the British Commission to the Exhibition, Mr. P. Cunliffe Owen, and his secretary, Col. Herbert Sandford. The Duke of Richmond is the presiding officer of the Commission, but Mr. Owen, well known as the Director of the Kensington Museum, will have charge of the British display. Col. Sandford will remain permanently here, but Mr. Owen, after an examination of the grounds and buildings, will return temporarily to England. Both gentlemen expressed the best of feeling as existing in Great Britain toward our Centennial, and indeed it is highly probable that such is the case, and that with Lowthian Bell's eminently able, honest and graphic report on our minerals, and the influence of the Centennial, the relations between the two countries, in a business way, will be greatly improved. Our own government appears to be waking up to the importance of the affair, and the chairman of the Governmental Board, Col. Lyford, is making the classification of the exhibits from the various departments. Their proposed display is announced as follows: The Bureau of Engineering will display a collection of models showing systems of fortifications and modes of temporary and permanent defense from 1776 to 1876. The Ordinance Department will show a complete collection of small arms, artillery, etc. The Medical Department will have a frame hospital on the ground, fully equipped with beds, surgical instruments and appliances, ambulances, stretchers, etc. The Quartermaster's Department will exhibit a collection of military clothing, tents, and military equipage generally, together with plans of barracks, etc. The Meteorological Department will exhibit a model station of observation, equipped and in working order, from which bulletins will be issued. The Field Signal Service will illustrate the practical workings of that branch in time of war. It is expected that the cadets from West Point will be ordered to this city during one week of the Exhibition.

So much complaint has been made relative to our supply of water, and the necessity of an improvement in this department, that a commission has been appointed for the purpose. This commission is to consist of five scientific and practical engineers, to be selected by the Mayor from eight candidates to be recommended by the managers of the Franklin Institute, to whom, in connection with the Chief Engineer of the Water Department, the subject is to be referred. An appropriation to cover the expenses of the commission has been made, and it is presumed the Franklin Institute will at once make the proper selections from their members, and that we will have an honest and practical plan for an increased supply of water.

The war between the Pennsylvania and Baltimore and Ohio Railroads has been so bitter and persistent in the reduction of passenger and freight rates, as to give color to rumors of great pecuniary loss to both companies. President Scott authorizes, however, the statement that the total decrease of net earnings for the four months ended April 30, 1875, is about $110,000, or less than one-sixth of one per cent. of the annual dividend fund. Considering the general depression of trade this is a favorable exhibit, and shows both good management and economy in the affairs of the company. The result of such a conflict, however, cannot fail to be injurious to the interests of both companies, and the sooner it is settled on a lasting basis the better for all concerned.

The failures of the Aberdare and Plymouth Works (Fothergill & Co.), of Great Britain, and of Sanderson & Co. and Gilead A. Smith & Co., has created much discussion in iron circles, as showing that almost, if not quite, as bad a state of things exists in the iron trade of Great Britain as here. The causes are: decreased American orders, higher cost of coal and ore, disturbances with labor, and, probably more than anything else, the large amount of bonds of American roads received for past business, on which interest has never been paid, and which have, in turn, been used as collateral for loans for which they now form no security, and which loans cannot be covered. Whether these failures will extend to other firms seems to be the principal cause of anxiety, but, in view of the fact that our importations of iron from Great Britain are now practically *nil*, little effect is to be expected upon American trade in any case. The Clyde lines are in contract with the Jackson & Sharp Company, of Wilmington, for a number of new steamers for the Philadelphia and New York service. These vessels will have double the capacity of any now engaged in the trade, and the contract shows how our coasting trade is steadily increasing. Another new ship for the Pacific Mail Company, being No. 151, was launched from Roach's yard on Saturday, but will doubtless be elsewhere described by you.

Fire at the Riverside Iron Works.

The Wheeling, West Virginia, *Intelligencer*, gives the following description of the partial destruction by fire of the Riverside Iron Works, in that city:

The nail plate building was totally destroyed. Much care was taken to preserve the machinery, and it is thought that the loss will not amount to more than from 30 to 40 per cent. This building was erected in 1867, and cost about $20,000. It can probably be replaced at the present time at a cost not exceeding $12,000 or $15,000. The building was insured for $5400. The machinery and fixtures, which were valued at something over $20,000, were insured for $18,841.

The new nail factory contained 36 nail machines. The building was erected only last winter, and cost about $10,000. It was insured for $5000. The greater portion of the building was destroyed, but the frame and that part covered with a tin roof remain standing. The factory had a double floor, which is still in good condition. It is impossible to tell how much damage the machines have sustained until sufficiently cool to admit of an examination, but it is thought the loss to machinery, as in the nail plate building, will not exceed from 20 to 40 per cent. of the total value. The machinery was insured for $10,000.

During the feeder's strike the stock of plate iron accumulated, and there was over $15,000 worth in the new factory at the time of the fire. Between 400 and 500 kegs of nails were also in the factory. The plate iron was uninjured, but the nails were damaged. The stock was insured for $2000.

During the fire a heavy piece of timber fell upon and broke the pipe connecting with the engine. The steam flew in all directions, making a hissing noise, which could be heard a great distance. It is thought that the engine has not sustained any damage. It cost $15,000, and is insured for $500. The grindstones in the factory all burst, and of course are a total loss.

As before stated, over $15,000 worth of mill plate has accumulated in the new factory. This will make about 15,000 kegs of nails, and keep the remaining 90 machines (in the old factory building) in operation for four or five weeks. In the meanwhile a shed will be erected over the rolls, which are thought to be only slightly damaged, and as there is considerable muck iron on hand, the company expect to be turning out plate iron in ten or fifteen days.

The nail factory will be immediately rebuilt. The foundations, floor, etc., being in good condition, it is expected that the factory will be covered, and all the machines in operation inside of two weeks.

About 125 men and boys will be temporarily thrown out of employment. The fire caught upon the roof from sparks from the furnace stack.

John McManus, president of the Reading Iron Works, of Seyfert, McManus & Co., died at his residence in Reading, early yesterday morning, after an illness of less than two weeks, in the sixty-seventh year of his age. He was one of the contractors of the Hudson River Railroad, New York; of the Portage Railroad, Pennsylvania, and of other roads, and assisted in building the Philadelphia and Reading Railroad, his section being immediately below Reading. He was also one of the original contractors of the Croton Aqueduct, which supplies New York city with water. He was the senior partner of the large iron firm of Seyfert, McManus & Co., a director in the Union Pacific Railroad Company, and a prominent officer of the Texas and Pacific Construction Company.

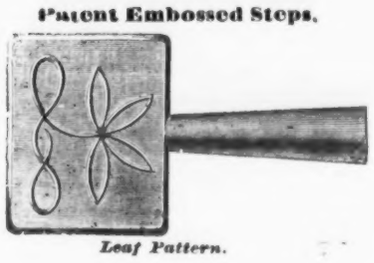
John J. Thompson, the senior partner of the firm of I. P. Morris & Co., of the Port Richmond Iron Works, Philadelphia, died May 25th, aged 59 years, at his residence, No. 2024 Spruce Street, after a short attack of typhoid fever. Mr. Thompson was very well known in Philadelphia as the head of one of the largest manufacturing establishments in the city, turning out some of the finest and heaviest machinery in the country. His establishment constructed the large engines for the Mint, the engine for the Lake Erie steamer "Mississippi," which has a cylinder 6 feet 9 inches in diameter by 12 feet stroke; the two Cornish pumping engines at the Schuylkill Water Works, several iron lighthouses for the United States government, and the engines for several of the monitors and ironclads, beside many other works of equal importance.

Mr. William Bonnell, a leading citizen and iron manufacturer of Youngstown, and well known to the trade, died in that place on Wednesday of last week, after an illness of four years' duration. He was born in England in 1810, and came to this country in 1841, going first to Cincinnati, where he remained for three years. He was a dyer by trade, and at that time found but little work in his line. He then came to New Castle, Pa., thence to Pittsburgh, and for several years fluctuated between that city and Connellsville. In 1855 he went to Youngstown with Joseph Richards and Thomas Brown, and bought the old iron mill. The firm prospered, and from their modest beginning grown one of the largest iron works in the country. He was most highly respected in all walks of life, and his loss will be deeply felt in the community where he lived.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Established 1850.

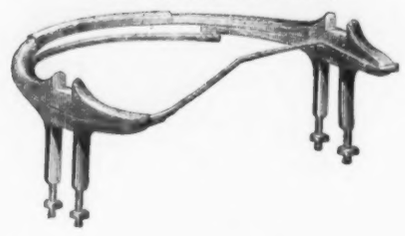
Patent Embossed Steps.



Leaf Pattern.

King Bolt Yokes.

No. 6 Fifth Wheels.

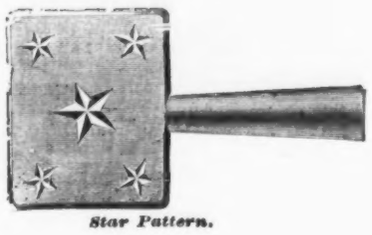


1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.

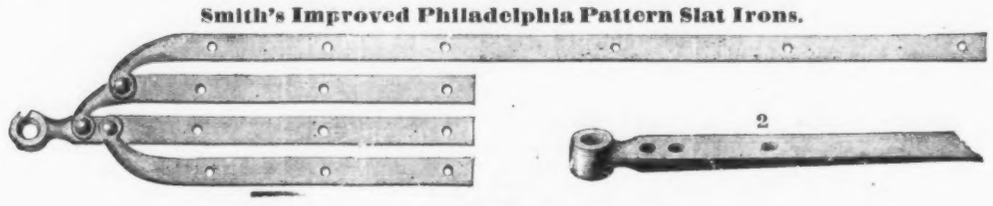
Upper View.

Lower View.

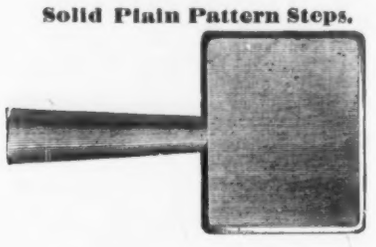


Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.



Solid Plain Pattern Steps.



MANUFACTURERS OF A LARGE VARIETY OF FIRST-CLASS

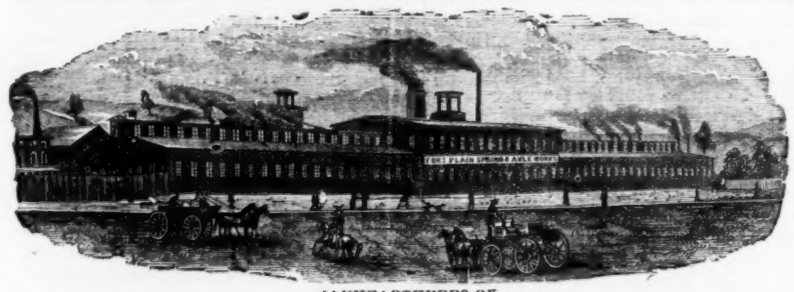
FORGED CARRIAGE IRONS.

Send for Price List.

FORT PLAIN SPRING & AXLE WORKS

CLARK, SMITH & CO.,

Green Jacket Axles. FORT PLAIN, N. Y. Fine Carriage Springs.



MANUFACTURERS OF

English and Swedes Steel Springs, and Iron and Steel Axles.

Execute orders promptly for

Black, Bright, Tempered and Oil Tempered Springs,

Of any Pattern or Style. Also for **AXLES of any description, from a COMMON LOOSE COLLAR to the FINEST OF STEEL.**

Our facilities for manufacturing are very extensive, and with our recent additions of new and improved Machinery, we defy competition.

Send for Price List and Descriptive Circular.

CARRIAGE BOLTS.

Buy the Best.

Clark's Patent Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not turn in its place.

MANUFACTURED BY

CLARK BROS. & CO., Milldale, Conn.

Also Manufacturers of

Plow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c

Send for Illustrated Price List

WILSON MANUFACTURING COMPANY.,

NEW LONDON, CONN.

MANUFACTURERS OF

SOLID BOX VISES.

With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes, Clamp Heads and Screws, Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and Genera Hardware.

GALVANIZING DONE TC ORDER.

WILSON MFG. COMPANY,

Warehouse, 97 Chambers and 81 Reade Streets, N. Y.

HOOPES & TOWNSEND,

Manufacturers of

MACHINE & CAR BOLTS,

Cold Punched Square & Hexagon Nuts,

Washers, Rivets, Wood or Lag Screws. Chain Links, Truck and Car Forgings, Bridge Bolts, Bridge Forgings.

IRONS AND RODS FOR BUILDINGS.

1330 Buttonwood Street. PHILADELPHIA.

Philadelphia Star Bolt Works.

"STAR"

Carriage and Tire Bolts,

From the Best Brands of

NORWAY IRON.

Trade Mark.

The Celebrated

"STAR" Axle Clip.

All Styles of

FANCY HEAD BOLTS.

Blank Bolts, Skein Bolts, Square Head Bolts, Plow Bolts, &c., &c., &c.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa

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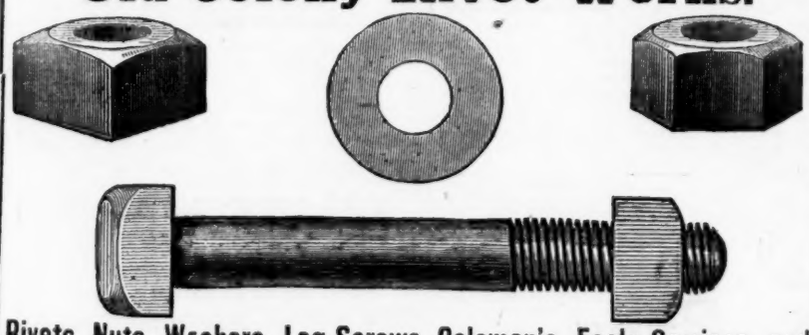
Old Colony Rivet Works.



Rivets, Nuts, Washers, Lag Screws, Coleman's Eagle Carriage and Tire Bolts, Axle Clips, Felloe Plates, Shaft Couplings, Stove and Machine Bolts, Driling Machines, Tire Benders,

&c. Full stock constantly on hand. Warehouse, 34 Warren St., N. Y.

ESTABLISHED 1837.

H. M. WENTWORTH & CO.

MANUFACTURERS OF

Carriage Springs & Axles

DAM, No 3 WATER ST, **Gardiner, Me.**

ALL GOODS WARRANTED.

GALVANIZED

Malleable Iron Tackle Blocks

All Sizes from 1 1-2 to 7 inch.

Manufactured and for sale by

W. & J. TIEBOUT, 290 Pearl St., N. Y.

MANUFACTURERS OF

Brass, Galvanized and Ship Chandlery

HARDWARE.

ARMS, BELL & CO.,

Manufacturers of

Carriage, Tire & Square Head Bolts.

Cold Pressed Nuts and Washers, Etc.,

YOUNGSTOWN, OHIO.

Price lists sent on application.

Patented July 9th, 1872.

PATENT IMPROVED STEAM TRAP

The only self-regulating Steam Trap in the world. For full description send for circular to

A. L. JONES,

Steam Heating Establishment, 51 S. 4th treet Philad

FRANKLIN S. MILES,

Manufacturer of

Brass, Iron, Steel and German Silver SCREWS.

205 Quarry Street, Philadelphia.

Alexander Brothers,

Manufacturers of **OAK TANNED**

LeatherBelting

410 & 412 North 3d. Philadelphia, Pa.

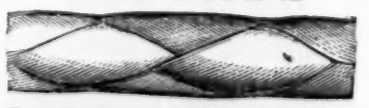
CHARLES W. ARNY,

Manufacturer of the Best

Oak Leather Belting,

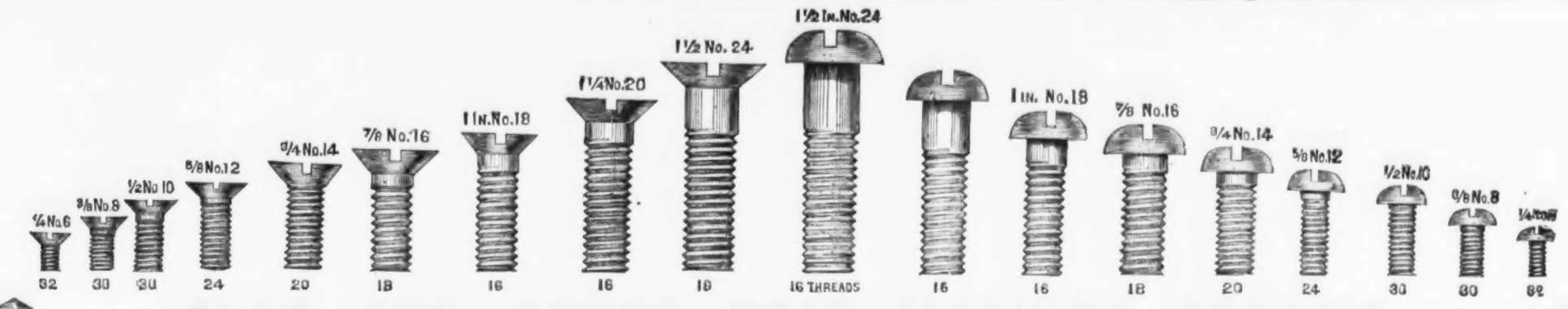
AND

FAUGHT'S



Patent Round Braided Belting,

301 & 303 Cherry Street, PHILADELPHIA.



FLAT AND ROUND HEAD MACHINE SCREWS,

OF SIZES, Nos. - - 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, SCREW GAUGE.
AND LENGTHS - - 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2 INCH.

PLUG AND BOTTOMING TAPS.

Manufactured, **KEPT IN STOCK**, and sold by

AMERICAN SCREW COMPANY, - - PROVIDENCE, R. I.

Fillister Head and Pattern Machine Screws Made to Order Promptly.

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11 Warren Street, N. Y.

H. B. NEWHALL,

Agent for the Following Companies:

EMMET HAMMER CO.,

Manufacturers of all kinds of

Hammers and Sledges and Contractors' Tools.

H. B. NEWHALL, Agent.

All our goods are branded "E. F. EMMET & CO., Brooklyn, N. Y." None genuine without the above brand.

MACHINIST Ball, Straight and Cross Pene Hammers.
BLACKSMITH, Hand and Riveting Hammers.
" Sledges, Swages, Fullers, Flatters, hot and cold Chisels.
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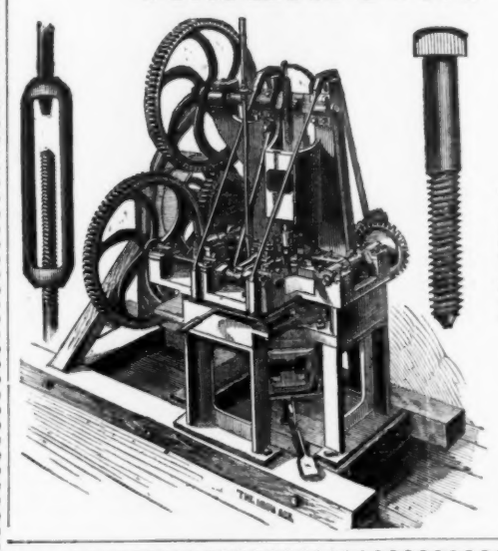

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The Iron Age.

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DAVID WILLIAMS - *Publisher and Proprietor.*
JAMES C. BAYLES - *Editor.*
JOHN S. KING - - *Business Manager.*

NEW YORK, January 2, 1875.

Until 1st instant the postage on newspapers was paid y subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, 40 cents; Semi-Monthly, 40 cents; Monthly, 24 cents.

Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound for the Semi-Monthly and Monthly, which will make the postage as follows on the different editions: Weekly, 50 cents; Semi-Monthly, 30 cents; Monthly, 15 cents.

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City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule n every instance.

CONTENTS.

The Magnetic Ores of Southern New York.

The importance of abundant and cheap supplies of a good quality of iron ore is so fully recognized by the trade at large that we need no excuse for the numerous articles in which we have from time to time brought to general notice various deposits of this mineral previously little known. On the contrary, it is gratifying to know that the information thus disseminated has been received with great favor, and has, in several instances, resulted in furnishing to iron manufacturers a supply of superior ore at more reasonable rates than had been previously possible, and thus enabled greater profit in production with a lower priced iron. Such descriptions we shall always furnish when reliably informed, believing it to be a portion of our duty as class journalists, and, therefore, take pleasure in publishing the following notes of an iron ore deposit contiguous to the Hudson River, but a comparatively short distance from New York city, and in immediate proximity to the railroad system of Southern New York and Northern New Jersey, which provides rail transportation to the furnaces of the Lehigh Valley. As is well known, the veins of magnetic ore peculiar to the Highlands on the east side of the Hudson River cross that stream and are carried forward in the same formation of hornblendic gneiss or gneissoid rock through Orange and Rockland counties, and thence by a belt about twenty miles wide into New Jersey. The beds, or veins—for, although of sufficiently great width to be frequently looked upon as beds, development invariably proves them to be furnished with regular walls, and hence true veins—are of great extent. As is common with all formations in the Huronian rocks, many of the rarer minerals are here found in addition to iron ore, among which are, in greater or less quantities, lead, silver, copper pyrites, carbonate of copper, garnet, tourmaline, feldspar and graphite, unmixed, however, with the iron. The geology of the region is highly interesting, and has been discussed at length by the various scientists who have professionally examined it. With the scientific treatment of the region we are not, however, here concerned. This section of New York State has been the site of great mineral development from the earliest dates; has supplied the ores for hundreds of thousands of tons of iron; has supported and still supports numerous blast furnaces, and yet contains sufficient partially developed ore deposits to supply ten times the number of the region. Most of the mines of this belt are on three or four lines extending from northeast to southwest across the counties named, generally continuous, but sometimes disturbed. From the earliest days of iron making in New York the names of the Clove, O'Neil, Forshee, Forest of Dean, Hassenclever, Greenwood and Sterling mines have been familiar to ore consumers, and for a long time they were a principal source of supply. In this belt lies the deposit of hard black magnetic ore, similar to the ores of Lake Champlain in appearance, differing, however, from these in the total absence of phosphoric and titanic acid, and supplementing the absence of these objectionable elements by the less injurious one of sulphur, the last, however, not in injurious quantity.

Leaving the terminus of the present New Jersey and New York Railroad, formerly known as the Hackensack Extension, in the town of Haverstraw, and following the valley through which the waters of Cedar Pond empty into the Hudson River, near Grassy Point, a natural roadway leads to the Cedar Pond iron deposits, which, from the abundance of ore, its freedom from phosphorus, and its richness in metallic iron, merits, and will in time receive, the attention of ore consumers. This deposit, which is most developed on a tract of some 1000 or more acres of rolling upland, is about five miles from the Hudson, at Grassy Point, and but three miles from the terminus of the railroad above named. Comparatively well timbered, principally with second or third growth timber, the periodical cutting of which furnishes employment and profit to the owners of the soil and fuel to the numerous brick works for which Haverstraw has long been noted, the soil is of fair agricultural value, and in some cases very rich. Cedar Pond, a small lake of a mile in length by three-fourths of a mile wide, is directly on the strike of the veins of ore, and its drainage has been suggested as an economical method of development. Near the center of the ore deposit, calculating from outcrop and development, is the ruins of the old Haverstraw furnace, one of, if not the earliest furnace of the region, and operated previous to 1790 with water blast, power being had from Cedar Pond, and the remains of a quite extensive dam being still visible. There are here a number of valuable and well defined veins of iron ore, all of the same character—dense black magnetite—in some cases highly crystallized, in others smooth and glistening. The principal veins are four in number, and most noticeable from the amount of development made on them, but throughout the region the magnetic attraction indicates numerous other veins of considerable magnitude. Describing these veins in their geographical order, they are as follows: First, the Hassenclever vein. Here a considerable amount of development appears; a shaft some 90 feet in depth has been sunk, in which, at a depth of about 30 feet from the surface, the vein shows full 40 feet in width between walls. About 500 feet southwest of this shaft the vein has been also worked by open cut, and at double this distance, in the opposite or northeasterly direction, another opening, some 30 feet in depth, has been made, from which probably 1000 tons of ore may have been taken. This vein is distinctly traceable for over 3000 feet, and can easily be worked for years above water level. In one direction from the shaft is a ravine, through which a railroad track has been partially graded and a cut made into the vein, striking it at some 40 feet from the surface. The ore from this vein has, in selected specimens, yielded 70 per cent. metallic iron with a specific gravity of 5·175, and average ores are stated to have never run less than 60 per cent. iron. There is no appearance of phosphates in the country rock, nor do analyses show any trace of phosphorus in the ore. Titanium is also utterly absent, the only impurity being sulphur, which, at the surface, is represented as about one-half of one per cent., decreasing with depth to 0·25, and steadily lessening in quantity. The constitution of this ore indicates easy fluxing, the silica being in the form of hornblende and other silicates calculated to form a fluid slag under fusion. As sulphur is now much less objectionable for Bessemer pig than other impurities, and as it can be entirely, or, at worst, nearly eliminated by weathering or roasting, it would appear that this ore should, at no distant day, form an important element in the production of Bessemer pig. The abundance of this ore is unquestioned, and with proper dressing, the vein, to the width of full 40 feet, should yield ore averaging, by furnace workings, 60 per cent. of iron. Where tested it has exceeded this result, and never fallen below it. The second vein is known as the old Furnace vein, but on which comparatively little development has been made, as the furnace must have used principally surface ores. This ore is rich magnetic, low in sulphur, no phosphorus, and considerably over 60 per cent. iron. This vein shows full one mile in length. The third, or Cedar Pond vein, shows full 30 feet in width, with an opening some 70 feet long on the vein and 15 to 20 feet wide, and 20 odd feet deep. This is over half a mile in extent, as traced. An analysis by Prof. Phole, of New York, gives:

Titanium	none
Phosphorus	none
Chrome	none
Sulphur	0·25
Metallic iron	61·00

West of this vein, and parallel to it, is number four, or the Eureka vein. This vein shows full 20 feet wide, and is traceable for a mile. It has been opened about 100 feet above the level of the pond, and shows ore of greater purity than any of the others. An analysis by Prof. Charles A. Seeley, of New York, gives: Iron, 58·81; Sulphur, trace; phosphorus, trace. Here then, simply referring to the veins described as showing any development, although as stated many more unopened veins appear, is an amount of ore within easy distance by a natural grade of the Hudson and water carriage, still nearer to rail to all points South and Southwest, which cannot be exhausted in a century of mining, and which offers both a very desirable supply to the furnaces of the Hudson, of New Jersey and Eastern Pennsylvania, and every facility for iron making in or near the spot. Relative to railroad communication, the New Jersey and New York Railroad Company propose connecting their present track with the mines here named at an early day, and possibly during the present season. This done the ore can be delivered to the boats on the river at a cost of not to exceed 25 cents per ton for freight, while to the furnaces of Eastern Pennsylvania it should be delivered, all rail, at a cost not to exceed 1½ cents per ton per mile. The present cost of mining and delivery of the ore at Grassy Point on the Hudson is stated to be not over $2·50 per ton, which, allowing a profit of $1 per ton, should leave these ores at $3·50 f. o. b. at Hudson, or say, $4·75 to $5 per ton in quantity delivered to the Lehigh and Schuylkill furnaces, a price at which few ores carrying 60 per cent. metallic iron, and with equal freedom from impurities, can be obtained. The locality is, moreover, very desirable for the manufacture of iron. The extensive print works and other manufactures of Haverstraw and vicinity have already created a large coal consuming trade, and the cars which transport the fuel, offer a cheap back freight for ores.

The stove foundries of Peekskill, and the numerous industries on the river near by, afford a first-class market for a good grade of foundry pig, while hematites to be used in admixture in smelting these ores are available at various points on the east side of the Hudson, and have been frequently referred to in these columns. No more reliable market can be found for pig metal than the thriving and growing towns on the Hudson River, while the comparatively short distance and low freight to New York would enable greater profit in iron making near these ores than at most points on the river. Many prominent iron makers look upon the Hudson River as one of the most desirable localities for iron production, and in 1872 a project was nearly consummated for the erection of the most extensive furnace plant of the country on its shores within the limits of New York city. Estimating very liberally as to cost of iron making at or near Grassy Point or vicinity with these ores, we should have:

1⅓ tons coal, at $5	$7·50
2 tons ore, at $2·50	5·00
Limestone per ton iron	1·00
Labor " "	3·00
Interest and contingencies	1·50
Total cost at furnace	$18·00

The profit on present low rates of pig iron even would, we should suppose, be sufficient to induce production under such cost, and certainly leaves a margin at even lower rates if such are to obtain. The ores herein alluded to are not being mined for market at present, probably on account of the depression in the iron trade, but certainly offer an abundance of a quality which, if not now needed, must very shortly come into active request. We have here alluded to them under the very reliable data furnished by competent mining engineers and experts who have examined them, simply to show what very valuable and very great mineral wealth of iron we have within a very short distance of this great consuming market, and in the interest of those of our readers it may concern.

Mr. Bessemer's Channel Steamer.

There is every reason at this time to fear that Mr. Bessemer's channel steamer is, practically, a failure. That such is the fact does not, we think, afford any occasion for surprise. Like most men, Mr. Bessemer has cherished a hobby for a great many years: unlike most men, he has had, late in life, the means and the leisure to ride his hobby to his heart's content. During the years devoted to the great work of his life, he has derived, probably, no little pleasure from the elaboration of his idea of a swinging saloon which should preserve its equilibrium under all circumstances, and no doubt he has thought that if the time ever came in which he could allow his genius for Naval architecture a chance to display itself, he would do something far greater and more original than anything he had accomplished in the field of metallurgy. In this respect, again, Mr. Bessemer was pretty much like all other men, for every man has a hobby and every one believes that if he only could ride it at the gait which suited him best, he would accomplish wonders and be supremely happy. Well, Mr. Bessemer had his hobby, and his chance to ride it, but he finds—as most men similarly situated have found—that it don't go. That he is still hopeful of making it go, is quite natural; but it is probable he is sorely disappointed that his well-laid plans should have so far miscarried, and it is quite certain he has found by this time that hobby riding is not so pleasant as most people suppose who have not tried it.

It is, perhaps, unfair to assume, from the results of the recent trial trips, that the Bessemer is a complete failure. In appearance she is certainly as ugly as any craft afloat, if the pictures we have seen of her fairly represent her proportions and model. She is much more commodious, however, than any vessel now in the channel service, and her interior arrangements are so comfortable and elegant that she will be a more agreeable ferryboat than the little tubs which now roll across from Dover to Calais. Her length and shape together make her unwieldy, and she has two or three times been unmanageable. The swinging saloon has not yet been tested under conditions favorable to the formation of an intelligent and unprejudiced opinion of the practicability of the idea, and the fact that it was allowed to remain fixed during the public trial trip, although all the machinery for maintaining its equilibrium was in position, may be regarded as indicating that Mr. Bessemer and Mr. Reed, his architect and contractor, have no great faith in its successful working. The English papers express doubts that it will ever be regularly employed in the channel service, owing to its unmanageableness in entering and leaving the Calais harbor. This, however, remains to be determined. We certainly hope that Mr. Bessemer will succeed in making his ship a success, and that to the disappointment which he doubtless already feels will not be added the mortification of complete and final failure.

On another page of this issue we give a telegraphic report of the semi-annual meeting of the National Association of Stove Manufacturers, with the address of the president, Mr. S. S. Jewett, of Jewett & Root, Buffalo. The address is a document of much interest, and will repay careful reading.

We also continue Mr. Isaac Lowthian Bell's "Notes on a Visit to Coal and Iron "Mines and Iron Works in the United "States." No other paper in this country has given it in extenso, and with one exception the English papers have published a short abstract only. We consider it of sufficient interest to justify its publication in full, and are doing so from proof sheets revised by the author.

Life-Saving Apparatus for Iron Vessels.

The frightful losses of life at sea which have become so frequent since the introduction of steamers, and especially iron vessels, suggests some inquiry in regard to the causes. A steamer goes to sea to-day provided with an immense number of boats, and yet passengers and owners know that, in case of accident, not more than one out of five of the boats on board will be of any use whatever. It is a very rare thing in these days for a crew to succeed in getting more than four boats into the water in case of an accident to a steamer, and sometimes, if there is a particularly heavy sea running, not more than one can be launched in such a manner as to be at all useful in saving life. On board the ill-fated Schiller there were eight boats; in all of these only three were launched with any success, and only two survived the night of storm. In other cases, not even one boat has been made available, and the losses foot up by the hundred in the cases of individual ships. Looking back over the long list of steamers lost since the President went down without giving a sign, we find nothing in the long list of wrecks but a continued increase in the number of lives lost. Each disaster, so far, seems to be more deadly than that which went before. Naturally, people complain that with all our progress, we have not succeeded in making things safer in the way of traveling, though we have done wonders in the way of speed. It should be remembered, however, that in the olden times ships were not as large as to-day, and if one went down with all on board, as they frequently did, we were not shocked as we are to-day, because the numbers were comparatively small. But our steamers are, or are supposed to be, as well provided with boats and life saving apparatus, in proportion to the number of passengers, as were the sailing vessels of the past; why, then, should not as large a proportion be saved. In the olden time it was not unusual to find all the boats of a vessel afloat and all the crew and passengers safely embarked in them, an unheard of thing in our days.

In looking for the reasons we have first the iron ship, structurally strong, but locally not much better than so much paper. Almost any blow is sufficient to drive a hole through her thin iron sides, yet we safely lift her out of water by the middle with fifty or sixty feet of stern and bow unsupported. In a wooden ship we find great local strength, the skin is the strongest part of her, it takes an enormous blow to destroy or break through it, even though her back may be broken at the same time. As a whole, the wooden ship is weak, yet she does not break up at once; in a word, it takes time to destroy her. On the other hand, the iron ship, though strong, goes to the bottom in a hurry, in spite of water tight compartments, when she has received a comparatively slight injury. With a wooden ship there was more time to work, and, of course, more could be done toward getting a crew afloat, but this by no means accounts for the difference between the two styles of vessels.

Years ago vessels were obliged to carry a number of boats, because in a vast number of foreign ports it was necessary to discharge cargo and do a thousand and one errands between ship and shore by means of a ship's own boats. In a word, the boats were an essential portion of a vessel's outfit. Of course the men were familiar with handling them. They were put into the water in almost every harbor, and were of necessity kept in good order and the tackle for hoisting or lowering always in running order. Crews could lower and handle boats in seaway, and often the whole cargo was taken on shore from an open roadstead in a vessel's own boats without the assistance of a lighter. In cases of danger it would be expected that the crew could lower the boats, fit them out with supplies, get the passengers into them and get away from a wreck in a short time and in heavy weather. In the present day lighters and piers, with all the other arrangements for handling cargo, make the boat an unnecessary part of a ship's equipment. One of our ocean steamers comes into port and not a boat is lowered; a tugboat takes off passengers, and a shore boat, hired for the occasion, takes a line to the dock, and unless it be for drill, an ocean steamer's boats need not be started from their chocks from one year's end to another. What wonder then, that if of wood they dry up, crack, get full of useless lumber, ropes get foul, and a thousand other things happen that prevent the boats from being of any service when they are needed. The boat of the present day is an unmitigated nuisance on a steamer; the number required is so great that room to stow them cannot hardly be found, and, if the ship keels over, as she is pretty certain to do if

she strikes a rock, half of them cannot be lowered at all. There is really no excuse for boats shrinking and becoming unseaworthy because metallic boats can be used, which are not likely to get harmed unless they rust out, which will not happen when they are well painted and kept so, as is commonly the case.

Another cause of the loss of life on board iron vessels is found in the fact that there is usually nothing from which a raft can be constructed. In many cases of shipwreck in the olden time the raft was the great means for saving life. With boats stove and the wreck hopelessly drifting, the first thing to be done was to get spars and construct a raft. There was generally enough of timber, and the worse the wreck the more fragments could be got to make the raft from. Whole ships' companies have taken to rafts and escaped death by means of them. Now on an iron ocean steamer the chance of making a raft is a mere nothing, every stick of timber about the ship big enough to float a cat is secured solidly to some mass of iron, every mast and all the spars of any size are now preferably made of iron, all of the standing rigging is wire rope and no small part of the running rigging is of chain—poor material, it must be confessed, upon which to place any hope of floating. In the olden time it oftened happened that when the spars came down alongside or upon the deck a raft could be made and fitted out with water and provisions before the wreck broke up. These rafts were readily made of such size as to hold a goodly part of a ship's company. Such things are no longer possible; with iron masts, spars and bulwarks the iron ship has almost nothing about her upon which a man may float, and a boat bottom up is the last thing to approach hoping for safety. It would be much more available if smashed and made up into a bundle. In fact many of the boats, miscalled life-boats, would be of more value if broken up and made into rafts, than in their present shape.

Lastly, we have the character of the men making up the crew. In the olden time sailors were needed on board a ship, and to make a decent sailor a man must have in him some of the stuff of which heroes are made. Such men can work in danger, can obey orders in danger, can put women and children in boats and take their risks with the wreck when need be. But the modern steamship don't need sailors; she is manned, as a rule, by what may be called laborers, who are no better than so many landsmen in time of danger. The result is, that when the ship strikes the rocks the cowards rush for the boats and prevent the women and children from entering. Such men are easily demoralized, the least panic is enough to drive them wild or render the officers powerless. There has hardly been a single wreck of a transatlantic steamer in the last dozen years, in which the crew have not made a rush for the boats, and have been kept in hand by the officers with difficulty, if at all. It is hard work to make such men brave in the presence of danger, and when tried they fail. Your regular old salt rather looks down upon this class of men.

What are the remedies: In the first place, do away with the boats; two or three are enough for any ordinary vessel, and they should be used, if for no other reason than to teach both men and officers how to lower them. Boats with all their fancy rigging are no good, for they upset, fill with water, carry little in proportion to their size, and, above all, are in the way and cannot be lowered except in rare cases. Life rafts promise best, for they can be thrown overboard, and are as easily handled as a deeply loaded boat, and much safer. They may be stowed so as not to be in the way. They are not liable to be stove like boats, and at the last they will float when the ship goes down, that is, if they are properly secured. Life preservers are all very well, but their record in shipwreck is rather insignificant. Their value may be great, but what they have done is not much spoken of. There would have been a much smaller loss of life in all the recent cases of iron steamers sinking had there been anything left floating when the steamer went down. What good is a life preserver if you are left afloat in the middle of the Atlantic with one on? The chances are that you will be drowned by the spoondrift, as were the ladies who tried to reach shore from the Schiller. Some of the morning papers say that a life raft would have been of little avail in the rough water around the Schiller. Possibly not, but we think that a life raft, with one or two real sailors on it, instead of such men as made up the crew of that vessel, would have shown a good record in life saving, even off the Scilly Islands. We need not specify the different life rafts in the market; they are abundant, and if these do not suit, others can be invented. That they are seaworthy has been proved by the fact that a raft of this kind has crossed the Atlantic, and that they do not require skill in lowering by the fact that one thrown over the side of a ship is all right, no matter which side up it may come to the surface.

THE NATIONAL ASSOCIATION OF STOVE MANUFACTURERS.

Semi-Annual Meeting at St. Louis.

(*By Telegraph to The Iron Age.*)

ST. LOUIS, June 9th, 1875.

The regular semi-annual meeting of the National Association of Stove Manufacturers met at the Lindell House to-day. About 50 members were present. The transaction of business was deferred until to-morrow, when it is expected that the attendance will be larger. The following is the address of the president of the Association, Mr. S. S. Jewett:

ADDRESS OF THE CHAIR.

GENTLEMEN OF THE ASSOCIATION: In my dispatch accepting the presidency of the National Association of Stove Manufacturers, I expressed the opinion that an organization "embracing so much ability, and representing so large an amount of capital, can accomplish much to the mutual advantage of consumers, dealers and manufacturers of stoves." The objects of this Association, as defined by the preamble to our constitution, are to "obtain full information of the statistics and condition of the stove trade of this country, promote the frequent interchange of ideas in regard to the manufacture of the same, and secure harmonious action in all matters pertaining to its interest." The desire to advance a common interest prompted the experiment of this organization, and its results have, thus far, more than met the most sanguine expectations of its founders. We have builded better than we knew. If any anticipated a combination to control absolutely the prices of the articles we manufacture, and the establishment of a monopoly, they have been disappointed; but those who held broader opinions, and recognized the advantages of co-operation, and of gatherings at which suggestion and experience combine to form the basis of future action, have been more firmly established in their convictions of the value of the Association.

What we have learned practically and in detail from each other is of very great value, but the fact that we have learned to know each other better, and to trust each other, is far more important. Asperities have been softened, friendships strengthened, and the members have gradually come to regard each other as workers in a common cause, each ambitious to contribute something to the mutual welfare.

Enlightened selfishness—which some one has made a synonym for patriotism—is unquestionably the inspiration of all individual and concerted effort. But each man, working intelligently for his own interests, employing his ingenuity, his energy, his experience and his capital to advance his own fortune, is contributing in the largest possible degree to the public benefit. To a certain extent the successes and failures of men become common property. We learn what to imitate and emulate, as well as what to discard and avoid, and in the case of our Association, we meet twice a year to examine the records of our transactions, and balance the accounts between policies that have proved erroneous and those that have proved advantageous. And in this manner we gain wisdom and strength.

I have spoken of the Association as of equal importance to the dealers in and purchasers of stoves as well as to the manufacturers. All the advantages in point of economy in production, excellence of workmanship, durability and beauty in design which we can gain, must necessarily be shared with those who retail and those who use the stoves we make. We have learned and they have learned that manufacturers' prices should be fixed as low as will afford a moderate profit; that large profits induce overproduction and disastrous competition; that nothing is to be permanently gained by demanding extravagant prices for our products. Such a moderate and reasonable basis secures the establishment of prices which are more uniformly satisfactory to all consumers, dealers and manufacturers.

Gradually, and as one of the results of our organization, stove manufacturing has become more clearly recognized as a business in which only those who combine talent, fidelity and capital, can hope to be successful. Dealers and purchasers understand this and govern themselves accordingly. They know as well as we, that the cost of manufacturing is not very variable, and the changes in the prices of pig iron are as accessible to them as to the largest manufacturer.

If I am correct in these statements, the business of stove manufacturing is established in this country on a sound and honorable basis, and one which must prove alike beneficial to those who convert the raw material into articles of necessary use, and to those who deal in and purchase them.

This fact, however, does not limit the sphere of individual enterprise, nor place all manufacturers upon an equality. There are still questions—of the quantity of production—of economy in manufacturing—of economy in fuel—of judgment as to the wants of localities—of style, ornamentation and finish.

THE QUANTITY OF PRODUCTION.

At the Albany meeting in February, 1874, I stated that, in my opinion, the production of stoves was too large, and that the common interest would be promoted by a reduction of 33 per cent. The experience of the past year, and the outlook for the present year have not changed this opinion. On the contrary, it is strengthened, and on this point I wish to present the views of one of the most thoughtful, careful and able men in our Association. I refer to Mr. Giles F. Filley, president of the Excelsior Manufacturing Company, of St. Louis. In a recent letter, he says: "Last year I took some pains to arrive at the capacity of our country for making stoves, the product, the sales and the stock remaining on hand January 1, 1875, with the following results:

	No. Stoves.
Capacity of all the foundries in the United States	1,500,000
Quantity manufactured	852,400
Sales made	906,000
Stock on hand January, 1875	203,000

"I think these figures are nearly correct. I find there is a great desire, on the part of manufacturers, to overestimate their business, both in product and sales, and I am of the opinion that under what we might call a healthy trade there is at least 33 per cent. greater capacity for making stoves than the country requires."

I will not detain the Association with a statement of the evils of overproduction, nor demonstrate that it is alike fatal to all parties connected with the trade. If more stoves are produced than can be sold, the manufacturer's capital remains unproductive; the stock becomes unsaleable and must be sacrificed, and his workmen must be put on short time or be unemployed altogether. At the present time the accumulation of large stocks is not wise. The facility with which stoves can now be turned out, and be transported to any market, makes it practicable for manufacturers to meet any sudden demand.

I wish to call your attention to a fact stated in the recent address of David A. Wells before the meeting of the American Social Science Association, in Detroit, as bearing on this subject. He says: "I do not think any one can review the industrial experience of the United States, as a whole, since 1860, and not feel satisfied that our average gain to the power of production during that time, and in spite of the war, has not been less than from 15 to 20 per cent. I would recall to you that three men now, with the aid of machinery, can produce as much in a given time as six men unaided could have done in 1860; that we have 40,000 more miles of railroad now than we then had to assist us in the work of exchange and distribution; that we can send our telegrams now for less than half what it actually cost to do the work in 1866; and finally, taking the Pennsylvania Central Railroad as a type, that we can send our freight at an average of 1·48 of a cent per ton per mile, as compared with a charge of 2·41 cents on the same road for the same service in 1864."

Under these circumstances, it is clearly for the common interest of the members of our organization to manufacture very slightly in excess of the current demand, and to profit from the experience of the past, which has demonstrated that the practice of manufacturing in advance large stocks of stoves can no longer be safely followed. The people are commencing by degrees the exercise of the much-neglected virtue of economy in personal and household expenditure, and will not purchase beyond their actual necessities.

ECONOMY IN MANUFACTURING.

"How to manufacture most economically?" is the most difficult of all the questions which press upon the attention of our members. The records of our Association furnish elaborate statistics of the cost of the production of stoves, and, possibly, none of them take into consideration all the items which make up the total cost. There are so many items which are variable, incidental and contingent, that there can be no absolute unit of the cost of a ton of stove plates. The most that can be said, without danger of contradiction, is, that manufacturers recognize the importance of carefully watching every step in the process of the production of a stove, and of endeavoring, by perfect system and by the division of labor into departments, to secure the best workmanship at the least practicable expense. Carelessness involves loss at every stage in the process of manufacture, and the cause of failures may be in the foundry or in the mounting room, but more especially in the pattern department, where heavy expenses are incurred. The problem of economy is one that each manufacturer must solve for himself, and each must contribute to the common good by fortifying against robbery "over against his own house."

ECONOMY IN FUEL.

In former times it was quite expensive and unsatisfactory to burn wood in the open air, and nearly as costly, but more cheerful, to burn it in the broad and deep fire-places which opened into the old-fashioned chimneys and ventilated the dwellings of those primitive days, and carried off more than half the heat. Then came the original—or better, perhaps, the aboriginal—box stove, a rude contrivance for deriving the least possible degree of heat from the consumption of the greatest practicable quantity of fuel. It may be said that in this way the saving in fuel was more than balanced by the loss of health incident to close rooms and vitiated air. But I am not here to argue this point. It does, however, afford me pleasure to say that modern hygiene and modern architecture are doing much to determine satisfactorily that we can have warmth and pure air; that we can have stoves and furnaces that do not destroy the oxygen which is essential to life, and ventilators which carry off foul vapors and bring us back the atmosphere of heaven.

The chimney back log and the box stove are numbered with the past, and in their stead we have cooking and heating stoves in which improvements of greater or less value are made every year. In the cooking stove it may safely be said that the minimum of the consumption of fuel has been reached, and that the reduction in the quantity required has been fully 50 per cent. during the past twenty years. Another feature worth mentioning is the convenience and the economy of time and temper in connection with this indispensable article of kitchen furniture. The cook or the housewife can broil, and boil, and fry and bake, all at the same time, and bring her dishes hot to the table at once. Not more than half the time formerly required is now necessary to prepare the family meal; and, when it is over, there is no more scolding because the water is not hot—that is to say, if the stove has a reservoir, as every well appointed kitched stove should, on the score of both health and economy. The variety of cooking stoves is very extensive and their name is legion; but the best now manufactured are quite simple in construction and not liable to be out of order, and this is true alike of those arranged to burn wood and anthracite or bituminous coal.

The great practical invention, for many years, has been the invention of the base burning stove and the improvements in its construction and use. There is something to be said in its favor on the score of economy, but much more on account of its convenience and the comforts it affords the family and the business man. The farmer can now keep his house warm during the night as well as the day, and the storekeeper and the manufacturer can commence business in appartments not wholly frigid, even in the coldest of weather. By the inventions which enable the coal to be consumed gradually and as it is needed; which convey the heat to all parts of the radiating surface and utilize it at every point; which produce the greatest possible degree of warmth with the least practicable consumption of fuel, there is produced a steady and reliable temperature. In the most exposed of dwellings it is no longer necessary to go to bed to keep warm, and to rise before day to avoid being frozen. The base burning stove, with little attention, maintains a reasonable equanimity of temperature. It is not important to the purposes of this meeting to detail the form of the diving flue, nor to explain the distinction between the base burner and the base heater. This large family of stoves have proved private and public blessings. With their illuminated windows and their cleanly habits, they have brought cheer into thousands of homes, and reduced largely the labor and the discomforts attendant upon winter in country and city. There is really no limit to the heating power to be developed by stoves of this description. They can be made to warm with certainty the smallest appartment, and a capacious manufacturing floor or a public hall. They can be persuaded to do duty upon more than one story of a building, and can be regulated to all the demands of a variable climate.

In this connection it is proper to speak of a problem, difficult of solution, and one of great practical importance. I refer to the invention of a heating stove that will economically and satisfactorily burn bituminous coal. The sulphur which is found in excess, particularly in Western bituminous coals, is destructive to iron. An instance is on record where an iron pot two and one-half inches thick subjected to a white heat from Iowa coal for four days was so disintegrated by the action of sulphur as to be capable of crumbling by the pressure of the fingers. The trouble and expense of coking this coal will not be resorted to in localities where wood or anthracite coal are moderately cheap. It is a matter of uncertainty whether the difficulty to which I have called attention can be entirely obviated or removed; but those who are experimenting in this direction deserve encouragement, and the progress of science may yet determine how more cheaply to remove the sulphur from the coal, or how to treat iron so that it can resist the destructive influence of the sulphur.

JUDGMENT AS TO THE WANTS OF LOCALITIES.

An important element of success in the manufacture of stoves is that of judgment and forecast in the production of the varieties and the number which different localities will require. A new stove involves no little thought and study—no little calculation and preparation, and, I need not say, no little outlay in money. There is the design, in regard to which opinions are sure to be as thick as leaves in the fabled vale. Then the wood patterns reproduced in iron, the casting, the mounting, the finishing, and then, *perhaps*, the sale! All this must be commenced generally a year or more before the stove can be offered in the market, so that the manufacturer must think and work at least a full year ahead. When the stove is at last produced, then follows the test by fire. Here the most watchful care is required. Every plate must be of a suitable form and thickness to stand the intense heat; their bearings and joints must be so constructed as to endure the expansion and contraction incident to their use. Such observations cannot be made complete in a few days; a thorough and satisfactory test demands weeks and months of trial under fire. Even then a wise precaution dictates the sale of but a limited number, in order to ascertain their action when in general use. The importance of this point cannot be overestimated, as I have been cognizant, even recently, of serious losses caused by a violation of it.

Furthermore, thousands upon thousands of dollars are annually thrown away in disastrous experiments. The sanguine inventor, who foresaw "millions in it," ascertains, to his cost and mortification, that his lack of judgment, or lack of mechanical knowledge, has involved him in embarrassment, if not ruin. It has often occurred to me that there is no branch of manufactures in which so many and varied acquirements and endowments are demanded and can be profitably employed, as in that of stoves.

We are called upon to supply stoves adapted to climates of all temperatures from the torrid to the frigid zone—adapted to the customs and prejudices of people of all nationalities—adapted to the wants of the farmer of the mountains and the farmer of the prairies, and to the tastes of all the classes and conditions of men who reside in villages and cities. It requires practical knowledge and experience to make a stove; but it requires more to know what manner of stove to make for the uses of the people who are expected to buy it. A stove superceded and out of style falls as flat on the market as would an invoice of the "loves of hats" which the ladies rejoiced in last season, and despise as "perfect frights" this blessed summer. The stove manufacturer must, in some way, familiarize himself with the people who are to be his customers; must anticipate their wants, and, if possible, determine the fashions.

The change in the mode of doing business in all the departments of trade requires additional precaution and judgment on the part of the manufacturer. Dealers in stoves do not, as formerly, buy large quantities once a year. The manufacturer is thus relieved from carrying a large stock, and can readily adapt his product to the requirements of trade. He knows that old styles must go out of market, and new styles take the preference, and that the losses on the excess of stock must fall on him. The dealer, except to the limited extent of ten or one hundred stoves, passes out of his calculation, and the individual purchasers, who count by hundreds and thousands, come to the front.

STYLE, ORNAMENTATION AND FINISH.

In a paper recently read before the Architectural Society of London, upon gold ornaments, reference was made to the superior artistic excellence of Greek goldsmiths' work, combined, as it is, with a great simplicity of design and workmanship. The author styled this the "reticent power" of Greek design, and it is this characteristic which, perhaps more than any other, distinguishes antique from modern art.

The antique artist was desirous to show how perfectly and effectively he could do just what was required, or what the subject demanded and allowed scope for, and *no more*. The modern idea of the ornamentation of stoves has been quite the reverse. Plates have been overloaded with designs out of all character and harmony with this article of furniture—designs at once extravagant and grotesque.

There is every reason why the stove, in its humble way, should be beautiful, and teach the love of the beautiful. The style or form should be artistically correct, and the ornamentative designs should be suggestive rather than explanatory—just enough to illustrate and emphasize simplicity.

With the progress of culture and the increase of wealth, greater attention is paid to the interior decoration of private residences and public buildings, and, year by year, among the better educated classes, there is more of the *reticent* and less of the *demonstrative* in ornament. This should be the fact in regard to stoves.

Historical paintings cannot be effectively produced in iron. Elaborate architectural designs, as a whole or in part, are not commended to public favor by moulding them in sand. But there is no lack of subjects which can be properly handled by simple geometric figures.

The system of curved lines terminating in simple ornaments; the wreath which consists in curves with ornaments in leaves and flowers; scroll work which may be arranged to supplement emblematic designs—these are the styles of ornamentation which do most befit all stoves, and they may be produced in *alto relievo* or *basso relievo*, in accordance with individual taste. As a rule, ornaments stamped or cast in iron and attached to the stove do not add to its attractiveness, and certainly not to its utility. Now that so much attention is paid to the proportions of heating stoves and to their adaptation in style to the uses of rooms, I trust that these general suggestions will prove acceptable.

MORTUARY RECORD.

Associations are no guarantee against the visits of the destroying angel. The year records the death of two of our members.

Since our last meeting, one of the pioneers of the stove trade in this country has died—Mr. Hudson E Bridge, of St. Louis. This sad event took place on the twenty-fifth of February last. Mr. Bridge came to St. Louis in 1837, and engaged in the stove business in connection with tinners' stock. The castings he then purchased were made by the various pig iron furnaces of Tennessee, and of iron run directly from the furnace. He continued this business until about the year 1845, when he commenced the manufacture of stoves, establishing the first foundry west of the Mississippi River. In 1850, in connection with his brother, he built the Empire Stove Foundry, and remained in the business up to the time of his death. He was a man of remarkable business capacity and of the strictest integrity; commencing life with nothing save his industry and energy, he amassed a fortune estimated at from $3,000,000 to $4,000,000. For the last ten years of his life, his time and energy were principally occupied in railroad enterprises and other public works projected for the benefit of his city. He died of organic disease, at the age of 65

Daniel H. Mears, senior member of the house of Mears, Olhaber & Co., died at Cincinnati on the 30th of April. He was born in Cincinnati in 1821, and was the second son of Mr. John H. Mears, who emigrated to this country from England, and whose name is identified with the history of the Methodist Episcopal Church in the United States. He received his education in Augusta College, Ky. He is represented in the press of his city as a business man of sterling worth, a devoted Christian and a liberal man. He was clear-headed, remarkably correct in his judgments, a firm friend, and a Christian gentleman of enlarged views of man, nature and ethics. He was a Mason in high standing, and for eight years Master of N. C. Harmony Lodge. I had not the pleasure of his personal acquaintance, but his record is that of an upright, devoted, hard-working and successful business man.

If I correctly comprehend the value and utility of this Association, I am satisfied that its proceedings should be made public, and that its sessions should be held twice in each year. We have nothing to conceal from the dealers in and the consumers of our products, and once in six months is not too often to meet for consultations of this character, the comparison of our personal observations, and the general interchange of opinions in regard to the future of our business.

Our meetings have been held at New York, Cincinnati, Albany, Long Branch, Pittsburgh, Niagara Falls and Chicago, and now we have come to the metropolis of the Southwest—the great and growing city, standing almost midway between the Eastern and Western oceans and the Gulf of Mexico and the Northern inland seas, and content to make the whole country tributary to her present and prospective prosperity. The Missouri and Mississippi Rivers and their feeders bring down the agricultural wealth of millions of partially developed acres which increases with more than compound interest year by year. The railroads stretching to every point of the compass, and reaching into every locality which has produce to sell or merchandise to purchase, invite and foster trade. Not relying solely on the advantages conferred by natural position and gained by enterprise and energy, St. Louis is rapidly becoming a manufacturing city. She wisely seeks not only to make her commissions upon the handling of property seeking other markets, but to coin money for herself by adding to the raw material the increased value which comes from the combination of capital and labor. Combining all the elements of permanent prosperity, fed by a region of country rich in agricultural and mineral resources, controlled in her business interests by gentlemen who illustrate the virtues of the people of the North and the South, St. Louis of to-day is only the prophecy of the St. Louis of the future.

I should fail to do justice to myself and to the members of this Association should I neglect to express my own personal obligation, and that of our associates, to the man to whom, more than any other one member, we are indebted for the success of this organization, One of the oldest and most thorough of the stove manufacturers of the country, comprehending fully the growing importance of the business and the principles which underlie it, studious of the best methods of developing and strengthening it, John S. Perry, of Albany, was very properly made the first president of the Association, and has been continued in the position up to the last meeting. He was an early convert to the advantages of concert of action, and has contributed very largely to the common fund of information which has made our proceedings valuable. He has cheerfully given us the advantage of his long experience, his careful research and his scholarly wisdom.

Poetry and sentiment are not intimately associated in the popular mind with the manufacture of stoves, and, though an admirer of poetry and a lover of true sentiment, I would not indulge in either on this occasion. You will permit me, however, gentlemen of the Association, to relate an incident which has had a great influence on my business life. Standing on the highest elevation of the mountains of New England, in the bright sunshine of a July morning, more than 30 years ago, overlooking the territory of three States, I saw a cloud gather and the rain fall. Above me was the clear, azure sky; below me Lake Champlain, the Adirondacks, the White Mountains and the pleasant hills and valleys of Vermont, dotted here and there with villages and spires. The sun shone on the top of the bank of cloud and made it radiant; beneath I knew it was black and dismal. One-third of the horizon was blotted out, and two-thirds was glorious. I thought then, as I have thought many times since, that, if one could always occupy a position of sufficient elevation, he would recognize the fact that clouds are always beneath the man who looks upward to the source of light, and that never more than one-third of the horizon is shut out from view. The cloud has its mission as well as the sunshine. Let us learn wisdom from each.

There is now on exhibition in St. Louis a mass of native copper that is attracting much attention, and which will be exhibited at the Centennial at Philadelphia next year. It was taken from a mine on Isle Royal, Lake Superior, is heart-shaped, and weighs 6000 pounds, exceeding by nearly double the weight of the famous copper boulder which was transported many years ago from the same region to the Smithsonian Institute at a cost to the government of $5840. The specimen exhibits the pure copper to the eye and contains ninety-eight per cent. of the metal. It was taken from an ancient mine, about seventeen feet below the surface, and when found had evidently been detached from its bed by the ancient miners. A number of pieces of copper beside the mass were found, weighing from an ounce to seventeen pounds, evidently clipped by the old miners. Stone hammers weighing from ten to thirty pounds have also been found by the hundred, either perfect or broken from use. To what race these ancient miners belonged can only be conjectured. Probably they belonged to the prehistoric mound builders, who worked in metals long anterior to the Indian races. At least numerous evidences of their occupancy were discovered by the early Jesuit explorers, while specimens clipped by them from the copper rocks are found scattered over nearly the whole country.

A cylinder, weighing 28 tons, has been cast at the Morgan Iron Works, N. Y., for the Chicago water works.

The Lake Erie, Alliance and Wheeling Railway project is now considered a success. It is expected that the road will soon be placed under contract.

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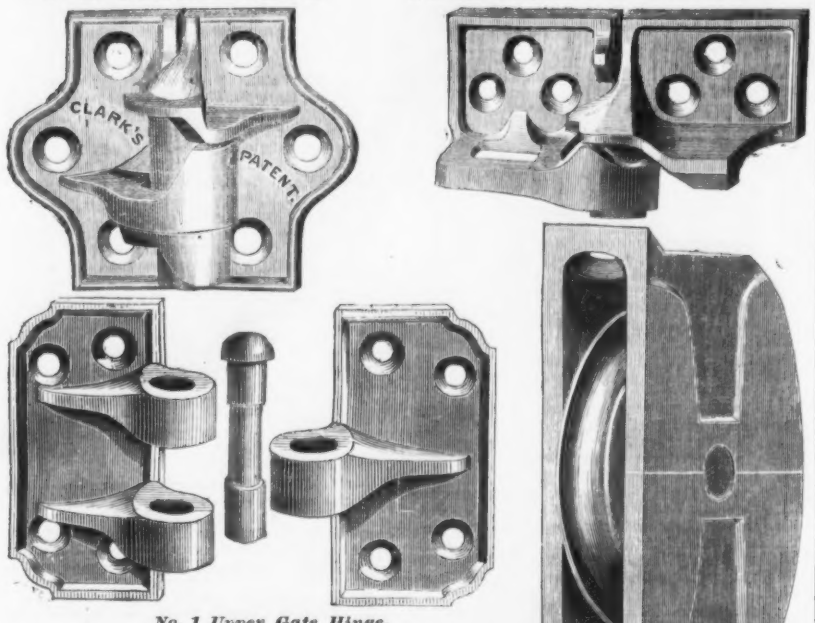

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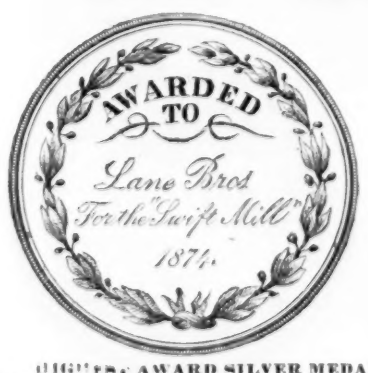

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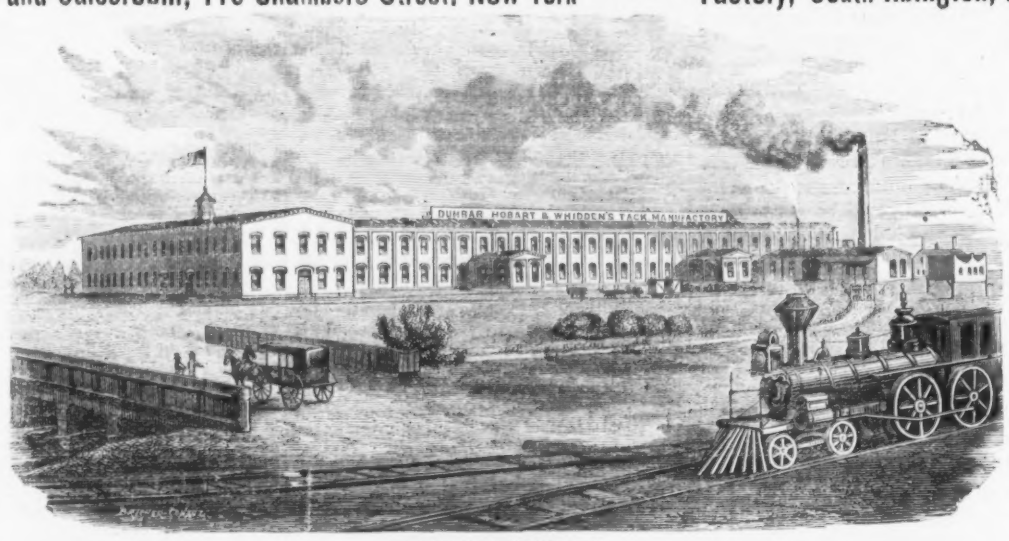

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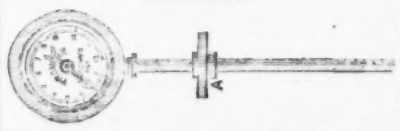

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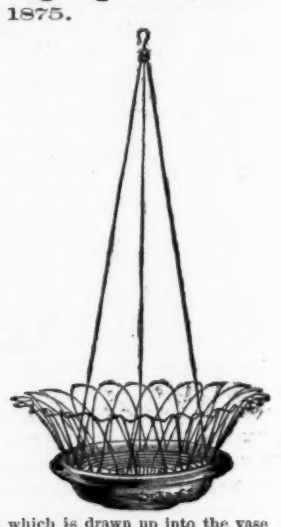

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Resistance of Rails.

M. Ch. Conche, Inspector General of Mines in France, who publishes a serial work on "The Permanent Way, Rolling Stock and Technical Working of Railways," has, in a recent number, taken up the question of the "Weakening of Vignole Rails by the Notch of the Shoe."

Intermediate notches, although they diminish to a considerable extent the resistance of iron rails, especially against shocks, still leave a sufficient excess of resistance to make a breakage very rare on well kept lines. But the case is very different with Bessemer rails; then the diminution of resistance is enormous. It is well to point out the state of a question, the importance of which has not yet attracted the attention of engineers. In testing iron rails, with and without notches, by falling weights, the results P and H (the weight of the monkey multiplied by the hight found necessary to produce rupture) have been as 100 to 70 for rails of superior quality, and as 100 to 50 for ordinary rails. With the same monkey, but falling from a greater hight on Bessemer rails, the following results were obtained: 100 to 50 with hard metal and half round notches, 100 to 30 same metal with square notches, and 100 to 20 with softer metal and square notches.

M. Sevene, engineer-in-chief of the Orleans Railway Company, at the request of the directors of the Creusot Works, made experiments on steel rails being manufactured there. The first was a static test, pressure without shock, the points of support being one meter apart. The notched rail broke with a load of 30 tons; the unnotched one required 55 tons to break it. The second experiment was with a monkey, 300 kilogs. in weight. The unnotched rails only broke when the fall reached 3·250 m. to 3·700 m.; the others, receiving the falling weight over the notch, broke with a fall of only 0·600 m. and 0·700 m. Result, about 100 to 19. The notch would be of little importance were it certain that the sleepers always afford an effective support, but this is far from being the case always, and if, by imperfect ramming, the rail has not a perfect bearing at the reduced part, it is certain that the chance of rupture is greatly increased.

The conclusions derived from the above experiments are: (1) That the reduction of the rail has less effect with regard to shocks in the case of iron than of steel rails; (2) that if, for an instant, we suppose the power of resistance of an unnotched iron rail against a shock to be only half that of a similar rail in Bessemer steel, we find that with square cut notches it will be in iron $\frac{0·70}{2}$ =35-100 of the solid rail, and in Bessemer metal, 20-100, giving 15-100 in favor of the iron rail; (3) that, therefore, the permanent way in Bessemer metal requires more careful ramming beneath the sleepers than a like permanent way in iron to prevent false bearing at the weakened point.

M. Ch. Conche is not quite right in stating that the above facts have escaped the attention of engineers. On the Lyons line fractures have always been attributed to the weakening of the rail in the manner referred to, and on the northern and eastern lines the rails are not notched; and more than that, all rails are rejected which have flaws in the shoe, as the slightest flaw will cause a rail to break at 0·50 m.

Enterprise at East Carondelet.—The works of the Meier Iron and Steel Company, East Carondelet, Mo., are rapidly approaching completion. These works, when completed, will cover 100 acres of ground; they will be by far the largest, finest and most complete and substantial of any works in the West, and perhaps in the whole country. The main building is already up, and the furnaces are nearly completed. These immense works will be run by three powerful engines, each of which weigh 100 tons, were made by Gerard B. Allen, of St. Louis, are already set up and will soon be tested. It is said that these works, when completed, will have cost between $2,000,000 and $3,000,000, and that they will employ many hundreds of skilled workmen, beside a number of ordinary laborers. East Carondelet, where these works are located, is about two miles from the village of Prairie du Pont, south, and between three and four miles south of the ancient village of Cahokia. It is estimated that there will be 200 additional houses erected there this summer, and that the completion of the new Meier works will necessitate the erection of at least 100 more. Nor is this all, for negotiations are already pending with enterprising firms, looking toward the erection of cotton and other manufactories on the Illinois side of the river, and in or near the village of East Carondelet, attracted thither by a cheap and constant supply of coal from the mines of St. Clair county, by water and railroad facilities, and by comparative immunity from taxation.

An attempt is being made in Ironton, O., to form a company for the manufacture of the Tyler brand of planters' hoe. The company, if formed, will be called the Iron Edge Tool Company. The necessary capital—$40,000—has been more than half pledged.

The number of miles credited to an engine on the Pennsylvania Railroad, before it was turned into the shop for repairs, is 100,589. This locomotive was in constant use three years one month and one day. It is numbered as engine No. 260.

Flags were flying at Newburyport, Mass., a few days ago, in honor of the completion of the loading of a cargo of about 100 tons of silver ore from the Chipman mine, to be smelted at works in New Jersey. The ore was hauled over a common road about three miles.

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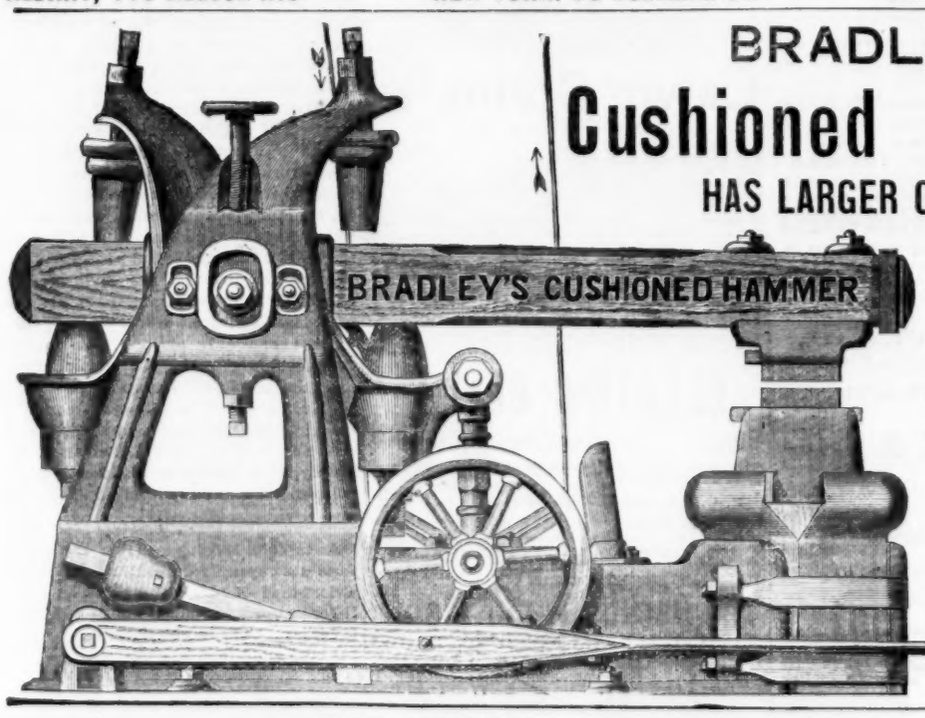

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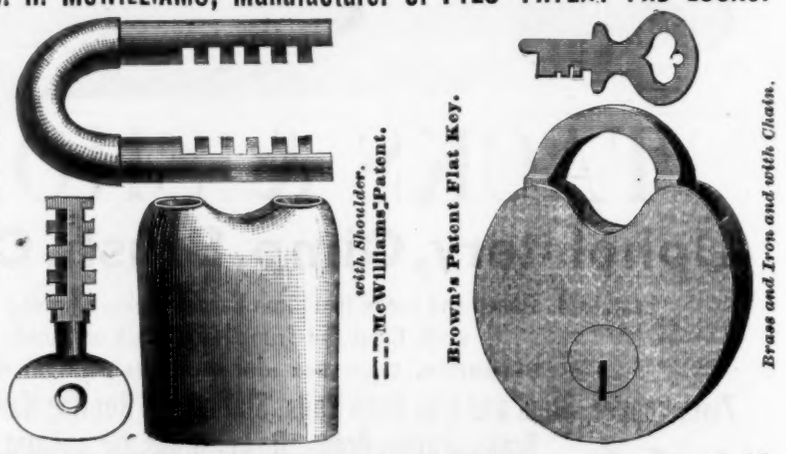

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Coal and Iron in the United States.

*Notes of a Visit to Coal and Iron Mines and Iron Works in the United States.**

BY MR. I. L. BELL, F.R.S.

(Continued.)

ORES OF IRON.

We may now proceed to consider the various iron ores, many of which, as will be seen, are found in great abundance in different localities of this highly favored region. From this general expression the spathose carbonate of iron must be excepted, but then, in Europe, this variety of ore is, after all, of comparatively rare occurrence.

By far the most important deposit of spathose carbonate of iron is that near Eisenerz, in Styria, the maximum produce of which was given me upon the occasion of a visit paid to it in 1865, at less than 100,000 tons a year. At Stallberg and Siegen, in Prussia, it is also mined, and, to a limited extent, spathose ore is obtained from the Brendon hills, in Somersetshire. It occurs, also, in moderate quantities in the veins which traverse the mountain limestone in Alston Moor and Weardale, of which the latter is smelted at the furnaces near Wolsingham. At Irun, in Spain, spathose ore and a brown hematite, evidently altered crystallized carbonate, were extracted to the extent of from 30,000 to 40,000 tons per annum at the period of my visiting that country in 1872. It is, perhaps, also worthy of remark that the ironstone of the Liassic and Oolitic groups, which furnish about one-third of the pig iron made in the United Kingdom, seems to be entirely wanting in the United States; indeed, I am not aware of the existence of a district in which the rocks of these formations are laid down in any geological map.

MAGNETIC IRON ORE.

In the vast mountain range, consisting of different groups of elevated regions, and extending from almost the extreme northern boundaries of the United States far down into the State of Alabama, ores of different species are met with. We will commence with the variety known as the magnetic, beginning with the deposits worked in the Adirondack Mountains close to Lake Champlain.

The mine I visited is some six miles from Port Henry. The ore comes up to the clay as a vein, varying from 150 to 200 feet in width. Into this they have excavated to a depth of 125 feet, and bored beyond this downward, at one place 80, and at another to 147 feet. The vein soon leaves the surface and descends under the rock, chiefly metamorphic, in which direction it has been explored to a distance of 1000 feet. We have thus a huge prism, as it were, of ore, of about 200 feet square, descending, no one knows how far, at an angle of from 26° to 40°.

The superincumbent rock is supported by pillars of solid ore 40 feet square at the base, and about 20 at the top, with a hight of considerably more than 100 feet. The miners formerly earned 9/9 per diem, but the rate is now only two-thirds of this sum, working 10 hours five days in the week, and eight on Saturdays. Reckoned upon the entire staff of men engaged at the bottom—that is, miners, breakers and wheelers, two tons per man per day may be taken as the average produce. At this mine near Port Henry, as much as 390,000 tons have been extracted in one year, and yet 25 years ago it was sold to the present owners for less than £1000. Since then, however, large sums have been expended on it for increasing the output, and in connecting the working with Lake Champlain by means of a railway.

In appearance the ore is frequently dense and amorphous, but it also occurs in a granulated semi-crystalline form. It is interspersed in some places more or less with phosphate of lime, and, as a rule, the vein contains too much phosphorus to render it serviceable for Bessemer iron. It is stated that there are four known veins in this neighborhood running from 12 to 15 feet in thickness. The ore of one vein, which is smelted at the Crown Point Works, on Lake Champlain, is sufficiently pure to be available for Bessemer iron. There is a third opening a little to the north of the town of Port Henry worked by the iron company of that name.

The total weight of ore worked in this district was estimated at rather more than 500,000 tons a year. Its cost varies from 6/ to 11/6 per ton, and its selling price from 20/ to 28/ per ton at the lake's side. The yield in the furnace differs according to the quality; some samples give as low as 55 per cent., and some as high as 66 per cent.

The deposition of the gneiss rocks, in the State of New Jersey, would appear to have been accompanied by an extensive and simultaneous deposit of magnetic iron ore. In some cases this oxide has settled from the waters which held it in suspension, pretty free from the presence of the earths which constitute the rock itself; at other times the ore is a good deal intermixed with the earthy matter of the accompanying strata. Hence the variations in richness of ore from different mines, or even from the same opening. These beds of ore, originally horizontal, have been tilted up, so that their present position appears to be that of veins more or less perpendicular.

In the State of New Jersey, there are above 100 mines, but many of these are of an extremely insignificant character. My visits and inquiries were confined to the more important, situated in the neighborhood of the town of Dover. That known as the Dickerson Mine is a deposit ranging from 12 to 40 feet in thickness, but in this is occasionally included masses of useless matter, which, in mining phraseology, go by the name of "horses." Its dimensions, in a direction perpendicular to the thickness named above, vary from 150 to 200 feet. This flattened mass of ore descends into the ground at a pretty steep angle, about 45°. In addition to this, instead of lying perpendicularly on its edge, the bed is also inclined at an angle of 45°. The ore contains phosphorus, and yields nearly 66 per cent. of metal in the furnace. The annual produce has usually been about 20,000 tons a year.

In the Hibernia mine, from which as much as 48,000 tons per annum are obtained, the ore lies in ribs or layers separated by hornblende schist. In one instance, there is a layer of ore 8 feet, separated from another 6 feet in thickness by 5 feet of the schist. The average yield of iron was given at 55 per cent.

Any one acquainted with mining science will easily perceive that a hard mineral, like the one in question, and placed as described, cannot be cheaply worked. As far as I could learn, every man engaged in or about the mine represented 1¼ or 2 tons of ore per diem. The best miners earn about 7/6 per day of eight hours. The royalty paid on the ore is nearly 3/ per ton, and probably in any new lease it would be even higher, owing to the great demand for this description of ore for the furnaces in the Lehigh Valley and its neighborhood.

So far as I could ascertain, the cost of the ore delivered at the railway by carts is sometimes as low as 17/6 per ton, and varies from this at the best mines to 22/6 at others less favorably circumstanced.

In the State of New York, similar deposits of magnetic ore are worked, but not having had an opportunity of examining them, I must pass on to a very remarkable deposit at Cornwall, in Pennsylvania, about 86 miles N.W. of Philadelphia.

At a point where the metamorphic rocks abut on the Triassic Sandstone, a large mass of trap rock protrudes. In front of the latter, that is, between the trap and the sandstone, is a ridge of elevated rock, about three-quarters of a mile in length, with a mean width of about 500 feet. This crest contains two depressions which divide it into three prominences, known as the Big-hill, the Middle-hill and the Grassy-hill. The first named is the highest, rising in the most elevated part to 350 feet. Bore holes have been put down in the small valleys just mentioned to a depth of from 50 to 179 feet in solid ore, and as the 350 feet rising above the surface consists also of solid ore, it is quite possible the deposit in the Big-hill may be 500 feet in thickness by more than this in width. We will, however, confine ourselves to the 350 feet worked at day from the Big-hill. A railway starting from the low ground runs, as a spiral, round the hill, and alongside of it the ore is worked in benches as high as the top of the wagons. The ore is soft and consequently easily drilled. A shot loosens enough to enable each man to detach and shovel into the wagons 10 tons for his day's work, for which he receives 4/9, or less than 6d. per ton. The mine, or quarry rather, is private property, hence there is no royalty to be paid, so that probably the actual cost of the ore is not much above 1/ per ton, while the selling price at the present moment, at a period of extreme depression, is 17/10. As much as 220,000 tons of ore have been obtained in one year, in fact, any quantity—it was stated 5000 tons per day—could be worked from this wonderful mass of magnetic ore.

It is only in recent years that the produce of this Cornwall mine has been in much request. The ore contains so much sulphur, that in dry weather, such as it was upon the occasion of my visit, a slight efflorescence of sulphate of iron covers the face of the rock. The iron, in consequence of the presence of sulphur, was so red-short that it could only be used as a mixture, but, on the other hand, the ore is practically free from phosphorus. By careful calcination, the sulphur is sufficiently expelled to enable the pig iron to be used in the Bessemer converters, and, hence, the enormous recent increase in value of the ore itself. In the course of working the mine, there is separated about 400 tons annually of copper ore, containing 20 per cent. of copper.

It was stated to me that as much as two millions sterling had been offered for this mine by a very influential company, having large interests in the neighborhood, but it was declined. I cannot vouch for the correctness of the report, but, looking at the resources of the "Cornwall banks," worse purchases have been made on both sides of the Atlantic than this would have been.

I would merely remark, in conclusion, upon the subject of magnetic ore, that large deposits are said to exist in North Carolina and elsewhere, but these not being worked, and lying away from the lines of railway, I did not visit. A certain quantity is also supplied from the extreme Northern States, but of these I can say nothing from personal observation.

SPECULAR IRON ORE.

We must now retrace our steps northward, in order to consider the valuable deposits of this variety of ore near Lake Superior—valuable from the cheapness of its extraction, its abundance, and its freedom from deleterious ingredients. I regret that the lateness of the season prevented my visiting this most interesting district. I was fortunate, however, in making the acquaintance of a gentleman possessing the minutest acquaintance with its resources, and of whose kindness in communicating it I have the most pleasing recollection.

The country which furnishes the so-called Lake Superior specular ore is that lying between Marquette and Escanaba on Green bay. A railway connects the two localities, so that the ore can be shipped at either.

Like the magnetic ore in New Jersey, etc., the variety we are considering, has probably been the result of horizontal deposition, but the strata—quartzite and jasper—containing it, have not only experienced an upheaval, but have also been affected by lateral pressure; hence the specular ore has been made to assume the form of large masses of irregular shape. They are sometimes from 200 to 300 feet long, 50 to 100 feet wide, and 100 to 200 feet deep. From these deposits the contents are obtained chiefly by open quarry work. The miners engaged in working the ore earn about 12/ and laborers about 6/ per day; and at this, I consider, the cost of extraction at the best mines will not exceed 7/, and it varies from this to 11/6 put into wagons at the mines. I have the workings from a blast furnace in my possession, smelting the ore in question over five consecutive weeks, and its lowest yield in any one of these was 66·28 per cent., and the highest 67·60 per cent. The annual output of the district has already exceeded one million tons. The data just given, coupled with the fact that the iron produced from Lake Superior ore is pure enough for the manufacture of Bessemer, will prove conclusively the correctness of the few words describing its value already used.

Of the wonderful deposit of specular ore in the State of Missouri, known as the Iron Mountain, every one has heard at least the name. In this case, however, unlike the deposit of magnetic ore at Cornwall, the mountain is not all iron. At its base it consists of a very hard porphyry, covered at the top to a depth of 20 to 60 feet with this rock so altered as to be readily pierced with a knife, and instead of having the dark hue of the rock in its normal state, it is of a light buff color. Traversing the harder strata is a vein most irregular in its width, spreading from a few feet to nearly 200 yards across, but in the latter case there had been intruded masses of barren matter. In one locality, however, I examined a face of compact ore free from all admixture of foreign substance, 70 feet high and 50 feet wide. Through the superimposed stratum of rock run small strings of ore, and through its mass generally detached pieces of the mineral are disseminated. This disintegrated mass is so loose in its texture as to be acted on by a current of water which is directed against its surface. This washes away the loose earthy matter, leaving the heavier ore behind.

The largest quantity worked in any one year from this deposit was 300,000 tons. The ore is so hard and solid that the labor of obtaining it is great; this and the quantity of sterile matter to be handled—three times the bulk of the mineral—reduce the useful effect to about one ton per man, per day, employed in the mines. The earnings of those occupied in "getting" the ore, vary from 4/6 to 5/3 per day, for which they have, in summer, 11 hours of actual work. The deposit itself being the property of the company who carry on the mining, I imagine the actual expense of delivering the ore into the railway wagons will not exceed 7/6 per ton. It is, notwithstanding its compactness, of easy reduction, inasmuch as a furnace only 40 feet high, with boshes of 9½ feet, blown with cold air, will make from 100 to 120 tons per week of gray iron, with less than 24 cwts. of charcoal. With moderately hot air, 150 tons can be run with under 21 cwts. of this fuel. The yield of the ore may be taken at 65 per cent.

There are other deposits in the vicinity of the Iron Mountain, one of which, Pilot Knob, I examined. It is apparently a regular bed or seam of ore lying at an angle of perhaps 15°. It reposes on, and is covered by stratified porphyry, into which it sometimes gradually passes. The thickness of the bed may be taken at 30 feet. Owing to its extreme hardness and amount of cover, the cost of working is high, probably 10/ to 11/ per ton. Hitherto, the cover has been removed and the ore obtained by open work. The superincumbent rock is now about 100 feet high, and preparations are being made to work the mine in galleries.

The yield is about 56 or 57 per cent., requiring something like 25 cwts. of charcoal per ton of foundry iron.

LIMONITE OR BROWN HEMATITE.

The two varieties of ore which have occupied our attention, viz., the magnetic and the specular, though existing in considerable quantities, do so in isolated patches. The next two, of which I propose giving some account, are remarkable, not only for their abundance in any particular locality, but also for the persistent manner in which certain veins are supposed to continue over miles and miles of country. Thus, the brown ore found in the neighborhood of the Lehigh furnaces, in Pennsylvania, is supposed to be a mere continuation of the deposits which, beginning in Alabama, pass through Tennessee on their way in a northeasterly direction. I shall describe the ore as I saw it in different places, commencing with Pennsylvania, in which latter locality it is found mixed among the alluvium as well as in the partly decomposed rock immediately underneath the clay. In both cases it is extracted with great facility, but much mixed with earthy and stony matter, sometimes to the extent of 15 or 20 per cent., at others it is accompanied by as much as 35 to 50 per cent. of impurity. The larger pieces are picked out by hand, and the smaller are separated from the earth and stones by being washed in a long horizontal trough, in which a shaft, armed with spirally placed vanes, is kept revolving. The movement of this shaft agitates the ore and pushes it forward, the water carrying off the chief part of the dirt. Enough of the latter, however, remains with the ore to reduce its yield of iron to 30 to 35 per cent. The land owners, usually small farmers, receive a royalty varying from 1/10 to 2/10 per ton. It is only used in limited quantities as a mixture with the rich magnetic oxide of New Jersey. Its cost, delivered at the furnaces, will be from 12/ to 15/ per ton.

In Western Virginia, I inspected a deposit of brown hematite, which was undoubtedly in the form of a regular vein, whether or not it is the continuation of a very prolonged one, I cannot say. It is about 24 feet wide, and has a face of 40 feet in hight, where it was being worked. Lower down the mountain an adit has been driven, and the vein was there encountered. A valley, perhaps a mile in width, separates this working from the opposite mountain, upon the flank of which the outcrop of a vein is also visible. It is, therefore, supposed that there exists, lying under the valley, a synclinal axis, and that that vein is continuous from one mountain to the other. The miners' earnings run from 3/9 to 4/9 per day, for which they can put three tons into the wagons. It yields about 47 per cent. in the furnace, and its cost varies from 6/ to 8/ per ton.

All the way down from Buffalo Gap to Covington, in the Blue Ridge Mountains, ore of the description we are considering is to be met with, and in some places in large quantities.

On the line of the Alabama and Chattanooga Railway brown hematite exists, apparently in enormous masses; I say apparently, because it has not been opened out in any one place on a sufficiently large scale to enable us to judge accurately of the actual extent of the deposit. I walked along the lands leased by the Alabama Central Iron Company, for many hundred yards. They are in the low ground, and had been explored by small excavations down to the vein, in all of which solid ore was met with.

A little to the south of this is an ore deposit, the property of the Pioneer Iron Company. It consists of a rounded hill, on ascending which, when within 150 to 200 feet from the summit, boulders of brown hematite are noticed on the surface, and the water courses exhibit the rock composed of solid ore. The bared masses, forming the crest of the hill, appeared passing into a more silicious form of the mineral. In one or two places excavations had been made, and a face exposed of solid ore, very much resembling that to be seen at Somorrostro, in Spain.

From this locality I walked through forest lands for fully a mile, and, judging by the loose blocks and occasionally solid rock open to view, the summits of the eminences consisted also of this brown hematite.

At Snake Creek Gap, near the Selma, Rome and Dalton Railway, I had an opportunity of inspecting an opening into a vein, having a width of about 50 feet at the north end, which was being put into carts at about 1/6 per ton. As the hill widened, the vein, judging by the surface and by the water courses, widened until it was 500 feet across. The hight, as ascertained by the aneroid, from the point where it became visible on the small ravines to where it disappeared toward the foot of the hill, was about 120 feet, but that toward the summit also looked silicious, like the ore belonging to the Pioneer Company, formerly described.

At one working, where the ore was being smelted, I learnt the cost, delivered at the furnace, was 3/9 per ton, and the actual yield 46 per cent., as shown by the books. It is unfortunately very rich in phosphorus, containing about 1 per cent., so that it is useless for steel making, a remark, I believe, generally applicable to this variety of ore as it occurs in America.

From the information just communicated, it will be perceived that brown hematite is found and worked in Pennsylvania, so far north as about 41°, and the places last described are close on the 33d parallel of latitude. If, as I was assured, veins of this ore are to be found all along the intervening country, and if they are more or less continuous throughout, we have five or six hundred miles of territory, capable of affording this valuable mineral in any quantity.

RED HEMATITE.

In the United States I met with no ore resembling, in physical properties, the fibrous and botryoidal masses found in Cumberland and Lancashire. That of Alabama and Tennessee is known as the red fossiliferous ore, and lies in regularly stratified beds among sandstone and shale, resting on the Silurian limestone.

In one instance, I ascended a hill 300 or 400 feet high, in which the measures were lying at an angle approaching 40°. The uppermost rock is sandstone, in some places only a few feet thick, and underneath it lies a seam of the fossiliferous ore from 8 to 30 feet in hight. I walked some distance along the crest of the hill, which is a bluff or precipice of this mineral, varying from 18 to 30 feet.

Unfortunately, the contents of this vein are extremely silicious, so much so, indeed, that it can only be used profitably when mixed with other ores. The composition will be represented by the following analysis.

Silica	18·00
Peroxide of iron	77·50
Lime	2·00
Magnesia	·50
Alumina	1·50
Phosphoric acid	·50
	100·

Of the whole seam only about 8 feet on the top is worked, the lower portions getting richer in silica and poorer in iron, but this 8 feet had been put into wagons at about 2/ per ton for labor. In the furnace it gave 50 per cent.

This variety of ore (it may be other veins) can be traced for many miles distant. Thus, at Rising Fawn, 130 miles further north, it is found in a seam from 6 to 7 feet thick, but there it is poorer in iron, contains more alumina, and it is rich in lime. An analysis, given me, shows;

Silica	9·00	
Peroxide of iron	50·00	= 35 per cent. of iron.
Lime	35·00	
Alumina	3·30	
Phosphoric acid	·67	
Water and difference	2·03	
	100·	

Of course, as the ore gets thinner, and from the depth of cover has to be won by close work, it becomes more expensive to get; thus, at one place, 6/7, and at another 10/4 was given me as the cost at the mines.

Georgia also contains this fossiliferous ore, which, moreover, in one state or another, occurs over a distance, from south to north, of more than 450 miles, gradually thinning as we go northward.

CLAY IRON-STONE.

In a country where the coal measures spread themselves out to such a wide extent, are found, as might be expected, considerable deposits of this ore of iron. On Davis Creek, near Charleston, on the Ohio, up Elk River, and elsewhere, I was shown seams not yet worked, from 2 to 3 feet thick, and said to contain as much as 36 per cent. of metal. By far the most important deposit is that known as the Hanging Rock region, near Ironton, in Ohio. It is generally obtained by close work, 12 inches being considered a good thickness, although it sometimes is as much as 3 or 4 feet. Above it is a seam of clay 4 feet thick, containing nodules of iron-stone. The ore is brought to the furnaces from a distance of 3 to 13 miles, costing, delivered at the smelting works, 11/3 to 15/6 per ton. Its yield is about 40 per cent. of pig iron. Owing to the amount of dead work which has to be excavated, the miner will not, on an average, get above 15 cwt. for his day's work. The wages earned run from 3/9 to 6/ per day.

There are about 34 charcoal and 14 coal and coke furnaces in the Hanging Rock region, and these, I believe, are almost exclusively supplied by the clay iron-stone bed of their own district.

BLACK BAND IRON-STONE.

I was conducted some miles through uncleared lands in West Virginia, to see a deposit of this mineral. The seam had been worked into for a few yards, and measured 6 to 7 feet in thickness. The bottom portion undoubtedly was composed of iron-stone, but the upper 2¼ feet, only gave 7·2, the next 3½ feet 27·27, and the remainder 35·8 of iron. A working of 4¼ feet would thus give a calcined ore containing about 36 per cent. of metal.

So far as I know, the only important deposit of this variety of ore is that found in the Tuscarawas Valley, and from it five or six furnaces are supplied, which furnish an iron said to be similar in quality to that smelted near Glasgow. The beds from which it is wrought are very limited in area. They are situated above the coal seams near the tops of the hills, and hence, owing to the denudations which have created the valleys, the black band is only found in isolated patches.

SMELTING WORKS.

Having now described, in general terms, the raw materials employed in the production of iron, I would ask your attention to the means adopted in the works in the United States for the manufacture of pig metal. Before doing this, a few words on the spirit with which this important question is there approached, may have some interest with our members who endeavor to pursue their calling with such light as scientific training can afford.

I would say in reference to this indispensable form of assistance, that our friends across the Atlantic are as fully alive as we ourselves are to its paramount importance. Very excellent publications are issued from time to time by the different States, under the superintendence of properly qualified officers, known as the State geologists. In these reports, or rather large volumes, is contained the most recently acquired information respecting the resources of the respective countries of the union.

As regards the education of those who are destined to control their industrial establishments, the most ample accommodation is afforded. I would call especial attention to the munificence of many citizens of the United States, who, at their own individual expense, and not at that of their descendants, in their own lifetime, expend immense sums in promoting scientific training and education.

As instances of this liberality, which I had personal opportunities of examining, I would mention that of my venerable friend, Mr. Peter Cooper, founder of the Cooper Institute of New York; of Mr. Pardee, who has recently erected a magnificent addition to the Fayette College at Easton; and of Mr. Packer, who has built an extensive establishment at Bethlehem, in which instruction is given gratuitously. I cannot pass from this subject without bestowing a word or two of high commendation on the Stevens Institute, at Hoboken, in which, by means of an extremely valuable collection of apparatus, some of the most able men of the day are permitted, beyond mere teaching, to devote themselves to original research.

I imagine, if I put down the sums expended on these four establishments at half a million sterling, contributed by four individuals, I should be within the mark.

The results of this training are visible all over the country. The general principles involved in the different operations are quite as well understood there as they are with us; and I believe that everything which has been done by our members as an Institute is as familiar to many iron makers in America as it is to ourselves. Every improvement effected in this country is at once studied, and, in case of need, applied by them. In short, it would be impossible to conceive any body of men, taken as a whole, who pursue their calling with greater earnestness and devotion than do those who are attached to the mining and metallurgical branches of industry in the United States.

In attempting to describe the smelting works of so vast a country, my observations must be restricted to those of a very general character. In endeavoring to bring this before you, I shall select certain great seats of the iron trade, a mode of procedure which will give a fair idea of the progress which has been effected within its boundaries, and, at the same time, will afford some conception of the advantages and disadvantages which have to be encountered by those engaged in its prosecution.

BLAST FURNACES OF PENNSYLVANIA.

Before the means of communication were as complete in the United States as they are at the present day, there were three conditions requiring at all times especial attention from him who seeks to apply himself to the smelting of iron—a ready supply of ore, a sufficiency of fuel within an easy distance, and what was then of equal importance, the proximity to population, in order to secure the necessary labor and a market for his produce.

So far as the States of New Jersey and New York are concerned, the mines of magnetic ore, the forests which then covered the surface of the country, and the vicinity of the towns springing up on the seaboard, supplied all these three requirements. As the primeval woods were cleared away, and the applicability of anthracite for blast furnaces, along with the value of the hot blast, were demonstrated by our fellow countrymen, David Thomas and William Firmstone, the banks of the Lehigh, the Delaware, and the Susquehanna were selected as suitable sites in which the fuel and the ores of New Jersey and those of other localities are brought together. By a system of slack water navigation, secured by damming up rivers, aided by short canals, and subsequently by railways, increased facilities of transport were afforded. In consequence of these, the localities in question have, in recent years, risen to a position of great importance as iron making centers.

Compared with Scotland, Staffordshire, or the Cleveland district in this country, the manufacture of pig iron, made from the materials just enumerated, presents, however, no advantages in the matter of transport. The conveyance of coal to the banks of the Lehigh will cost about 6/ per ton of iron made. The conveyance of the ore from New Jersey, in many cases, 10/ per ton of iron made; total, 16/. In the so-called Cleveland district, in the North of England, I have estimated that in order to bring the colitic ore, the flux, and the fuel together, the cost of transport is something like half the sum paid by the Pennsylvanian makers on the ton of iron.

With regard to the blast furnaces themselves, making allowance for the changes rendered necessary by the climate, there is in reality no difference worthy of notice. Their means of receiving the raw materials resemble our own in the North of England. Of course, the chief subject for consideration is the question of fuel consumption, and here I am bound to say, as a rule, the Lehigh masters are perhaps a little behind the age. In furnaces 55 feet high, with boshes of from 17 to 18 feet, the anthracite used in smelting an ore yielding 50 per cent., with 12 cwt. of limestone, was about 35 cwts. A portion of this waste I conceive to be due to a want of a sufficient heat in their blast, which, however, by the pyrometers, always in use, indicated fully 1000° F. That it really fell short of this, generally speaking, was proved by its inability to melt zinc, which fuses at a couple of hundred degrees below this temperature. The more important cause, however, must be ascribed to the insufficient hight of the furnaces; but in this matter no one can feel surprised that the iron smelters, whose fuel is anthracite, should have hesitated before following the example of English iron masters. The latter have the advantage of using a compact and hard fuel, which comes down in large pieces to the hearth, while anthracite is apt to splinter with the heat, and requires, it is said, even in a furnace of moderate hight, a pillar of blast equal to from 7 to 9 or 10 lbs. to overcome the resistance.

One or two iron masters, however, have been bold enough to venture on the erection of furnaces of 72 feet high, and their experience has proved eminently successful, for the fuel has been thereby reduced to something like 25 cwt. per ton of iron. I do not say that with a little higher temperature in the blast, and an additional hight of furnace, even this is not capable of a little reduction; at the same time, looking at the usual quality of their coal, I am not sure whether this must not be regarded as a very satisfactory result.

In the matter of wages, the individual rates, at least of the skilled men, were below ours at the period of my visit there, furnace keepers receiving 8/6, against 10/ to 12/ paid in the North of England. As a rule, however, they have more men than we employ for the same work, and this, added to some superiority in our arrangements and larger make, enable us to smelt a ton of iron for considerably less than the amount paid in wages in Pennsylvania.

Their blowing machinery, as a rule, is of the highest character, due regard being paid to strength, as, indeed, is no more than is required, looking at the great pressure of the blast in use. Open tops being formerly the fashion, the gases were drawn through apertures in the furnace sides, and, in order to avoid loss, the boilers and heating stoves were placed on platforms at an elevation of 25 feet or more from the ground. This arrangement, by increasing the distance of the hot air apparatus from the tuyeres, may be the cause of the blast not being delivered into the furnace at a sufficiently high temperature.

The make of the 55 and 60 feet furnaces, of gray iron, may be taken at 200 tons, and that of the larger at 300 tons per week.

LAKE CHAMPLAIN FURNACES.

The rich ores found in this district enable the smelters to be economical in the anthracite used, which, laid down at the works, costs about 24/ per ton, the consumption being about 25 cwt. per ton of pig. At Crown Point and at Cedar Point, new furnaces have recently been erected of excellent construction, the former 60 feet high and the latter 70 feet, with Whitwell's stoves. In consequence, however, of dulness of trade, the Cedar Point Works are not yet started, so that nothing can be said of the advantage of using superheated air with large furnaces on the mineral of this neighborhood; but with 24 cwt. of anthracite, even with an ore of 60 per cent, there does not appear much room for improvement. The head keepers here were earning 8/10 per day, but were under notice for a reduction.

LAKE SUPERIOR FURNACES.

The fuel employed is exclusively charcoal, of which about 18 cwt. in the furnace give a ton of iron, but to cover waste it is taken at 20 cwts. The yield of the ore is above 64 per cent., and is so readily smelted that a furnace 41¼ feet high and 9¼ in the bosh, will average about 250 tons per week of No. 1 pig fit for Bessemer purposes. About 1 cwt. of limestone per ton of iron suffices as flux. The keepers earn 10/ per day, the wages on a ton of metal amounting to 9/.

CLEVELAND FURNACES.

At or near Cleveland City, on Lake Erie, works have been built as a convenient place for the ores of Lake Superior, to meet the block-coal from Briar Hill, near Youngstown. Including the railway dues and the freight from Escanaba to Cleveland and delivery at works, the cost of transport on the ore will reach 15/ to 16/, or from 22/6 to 24/ on the pig. The carriage on the coal amounts to at least 9/ on the ton of iron; so that for this item of transport alone, including moving the limestone, nearly 35/ per ton of produce has to be expended. The furnaces are, in general, about 62 feet in hight, running about 300 tons per week. The coal costs them delivered about 13/6 per ton, and of it, 2¼ tons are consumed per ton of pig. In some cases this is mixed with Connellsville coke, brought from so great a distance that its price, delivered at the works, is 17/6 per ton. The head keepers earn 7/6 per day, and the wages on a ton of iron amount to 9/ and 10/.

(To be continued.)

* Paper read before the Iron and Steel Institute.

Navigating Ocean Steamships.

We take the following very sensible article from the San Francisco *Commercial Herald:*

The frequent disasters to ocean-going steam ships on this coast seem to have been, in a majority of cases, the results of too much confidence on the part of the commander, and of parsimony on that of the owners. It is beyond question that this coast is very much clearer of impediments to navigation than the Atlantic, and this fact is too apt to provoke over-confidence, which necessarily leads to negligence of many precautions which should always be carefully observed. It is also true that our steamships are not as thoroughly provided with the best of instruments, and not generally so well found in life saving and other requisite apparatuses to insure safety as those of foreign nations.

Appended will be found a judiciously prepared communication from one of our most experienced and scientific steamship commanders. We present it to our readers, with the hope that they will give it their most careful consideration:

The stranding of many steamships on our comparatively safe coast line, suggest the probability that there may be considerations in the technical management which are either unheeded, or only imperfectly understood. The purpose of this article is to call attention thereto.

As a plain proposition, the loss of a steamship on a "clean coast," with unlimited room seaward, is inexcusable, unless in approaching her port. There are many risks in navigation which are unavoidable, and with the best judgment, as well as the most careful management, occasional losses by stranding will occur; but no steamship commander is warranted in assuming any risk that can be avoided. The safety of the lives and property entrusted to his charge should always be the first consideration. We propose, however, to consider the technical precautions which will generally ensure safety, and the considerations leading to such precautions.

The use of the lead is of much less importance on this coast than on our Atlantic seaboard; nevertheless, every commander should bear in mind the fact that when disaster occurs, its previous use goes far to exonerate the captain, and many a time has the writer made use of it solely from this consideration. For this purpose all steamships should be provided with some of the self-registering leads, which indicate depth without complete stoppage of the ship. We venture to assert that few, if any, such leads can be found on board our coast steamers, although costing less than $100.

The local deviation of the compass is a point to which too little attention is paid, although the most important as regards safety. We find hardly an iron steamship sailing out of this port provided with what can be strictly called a "standard compass." The correctness of the steering compass is left generally altogether to chance. Such a thing as "swinging ship" to ascertain local deviation is unknown at this port, and we have no standard bearings whereby compasses can be tested on even one heading. No steamship should be allowed to proceed to sea without a "standard compass," either so made by the regulated proximity of magnets, isolation, or by a tabulated form, showing local deviation on different headings, as ascertained by swinging. Even with this important instrument, no commander should neglect azimuth observations and amplitudes, failing to understand which, he should not be considered competent to command. The above two points indicate deficiencies in equipment which are easily remedied, but which are, nevertheless, generally found wanting on our steamships.

We have now to consider the equally important and more interesting points regarding the shaping of the course. It is an axiom in navigation that a steamship running on a parallel course with a coast line will ultimately run ashore; or otherwise, the parallel course is impracticable on a long run. Still, it is an undoubted fact that many fine steamships have been lost on this coast by the ignoring of this proposition, the truth of which is evident for the following few reasons among many: All seamen are aware of the fact that two sailing ships in a dead calm will approach each other and finally collide, unless worked apart by means of catspaws. The reason is obviously the fact that two dense bodies floating in a liquid will, by their mutual attraction, be drawn near each other. How much more rapidly, then, will a continental coast line draw toward itself the steamship moving parallel thereto. The writer has very many times tested this with the invariable result—haul off or run ashore. The fact that all floating objects approach, and are finally thrown upon the beach, also proves this. There is also a pulsation of the ocean toward the land which is constantly drawing a ship inshore. This landward movement of the wave motion is plainly proven by the constant surf on the shore line when a moderate distance off shore—only the slightest motion landward is noticeable. The proximity to all coast lines tends to produce local deflections of the magnetic needle by means of mineral substances contained therein. This is particularly the case on our mountainous sea coast, which is well known to be largely mineral in its general character.

The above considerations would imply the necessity for great caution in laying coastwise courses, particularly at night and in foggy weather. The mere "hauling off" of a point—more or less—tends more to a fancied than any real security, since it is obvious that so small an angle will only postpone the disaster, not prevent it. "Hauling off" a little may do for a night, or a short run, but where you are at the mercy of your compass, it will not ensure safety to depend on so unreliable an idea. On many occasions when running parallel courses on this coast, we have adopted an expedient which ensured absolute safety with trifling loss of time. When convinced that it was unsafe to depend on our compasses in thick fog on the California coast, and during pitch dark, rainy nights on the Mexican and Central American coasts, we have often turned the head of our ship directly off shore and steamed full speed one hour, and then, with the serene consciousness of absolute safety, again laid our ship on her parallel course for the night, still steaming full speed. How much better this than the risk, anxiety of mind, and mental strain attending the uncertain slowing down, with adherence to a slightly deflected course! How cheaply was absolute security purchased, and even time economized, by this simple expedient! The professional reputation of a commander should be as precious as his life. If he burns a dozen tons more of coal, or delays his ship an hour, the worst he can meet with is a reprimand, which his professional knowledge will assure him is undeserved. If he beaches his ship he destroys his reputation, loses property entrusted to his care, and, most of all, risks the lives of those depending on his judgment and skill. How foolish, then, to take any unnecessary risks. Many a time there will be, in one's nautical experience, when risks are unavoidable. In such cases it only remains to consider well your course, take all precautions you can, keep your ship well in hand, and let her go, but not for one minute turn her over to second hands in such cases, that if disaster comes, truth will say, "the captain had charge of the deck!" A pernicious habit has obtained among passengers of expecting polite attentions from the commanding officer. A captain on a coastwise route has little time for gallantry. The smiles of the fair sex won't keep his ship off the rocks, and they may tend to disturb his cool judgment. Let the ladies remember that the best captain is he who devotes himself to his ship and finds little time for polite attentions to them. It is a matter of life and death; not one of gallantry. Better the attentive, competent and careful commander than the popular ladies' man.

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We are informed that J. B. Dickinson is traveling through certain sections of the Western States, representing himself to be a traveling agent of the Rochester Axle Co. Mr. Dickinson is not in our employ, and any person advancing monies to said Dickinson on our account, do so at their own risk.

ROCHESTER AXLE CO.

TRAVELERS PLEASE TAKE NOTICE that the Hamburg Line, also the White Star Line of steamers, are supplied with "Edson's Recording Steam Gauges," by which passengers are secured against disaster from carelessness of engineers in charge of steam. Abundant notice is given when steam pressure exceeds prescribed limits, and the tracings on the charts show what steam has been carried from hour to hour, night and day. These gauges are sold by *M. B. EDSON, 91 Liberty Street, New York.*

MANUFACTURERS

desirous of introducing their goods to the **British** and **Continental** Markets, are advised to insert advertisements in the newspaper **"IRON,"** published every Saturday, at *99 Cannon Street, London, E. C.*

Scale: First 3 lines, 8/; every additional line, 10d. Price, 6d. per Copy, or 30/ per annum, inclusive of postage to the United States.

Special Notices.

TO LET, For Hardware Business,

Part of STORE, DESK or OFFICE ROOM.
EDWARD PHELAN,
113 Chambers and 95 Reade Sts, N. Y.

Presses Wanted.

1 Power Press with clutch, suitable for shearing hot steel 3 in. square. Slide to make 40 to 60 strokes per minute.

1 Power Press with clutch, suitable for shearing cold iron ¾ in. thick. Slide to be 10 in. wide, 4 in. motion, and to make at least 25 stokes per minute.

Address with full description, cuts and prices for such presses, either new or second hand.

E. H. S, Collinsville, Conn.

WANTED,—A situation to travel for a Manufacturer or General Hardware House, by a young man well acquainted with the New England trade. Commission or salary. Best of reference given. Address, *CHASE, 19 Oliver St., Boston.*

For Sale.

For Sale or Trade for Iowa or Nebraska Farm Lands.

A fine brick store, 40x80, with a fine well selected stock of Staple Hardware, Stoves, &c., of about $8,000 to $10,000. Situated on a principal street, in a flourishing Missouri river and railroad town in Nebraska. Address *E. T. DUKE & CO., Plattsmouth, Neb.*

Notice to Capitalists.

FOR SALE.

Coal stock that pays 40 per cent., together with Dry Goods, Groceries, Clothing and a general Mining and Country Store. Also Railroad contract for ten years to supply coal; and a valuable trade with the surrounding country. From 100 to 200 miners are supplied by the company's store. Capital required, $25,000. For particulars, address, *BOX 5,* Office of *THE IRON AGE,* 10 Warren St., N. Y.

Factories To Let

At Haverstraw, N. Y., on the Hudson River. Two large brick factories, respectively three stories 94x30, with extension one story 97x35, and three stories 90x38, abundant water power in each, turbine and overshot wheels. Railroad and steamboat communication with New York. For particulars, Address, *JOHN PECK, Haverstraw, N. Y.*

FOR SALE,

An old established and favorably known *Hardware Store,* in one of the most thriving towns in Northern Ohio. Stock will invoice ten thousand dollars, and trade will justify additional investment of five thousand or more. Satisfactory references and reasons for selling, with full particulars, will be furnished on application. Address, *WOLCOTT BROTHERS, Toledo, Ohio.*

FINER CHANCE SELDOM OFFERS.

For Sale, the stock and fixtures of a Retail Hardware House, business successfully conducted since 1860. Located in a thriving town of 10,000 inhabitants. Stock embraces Builders' Hardware, Agricultural Tools and Machines, Stoves and Tinware. Tin Shop in connection. The senior partner having deceased, the surviving partner will sell the entire interest to engage in other pursuits.
Address, *BOWERS & JENKS,*
May 31, 1875. *Milford, Mass.,*

The Eureka Agricultural Works, Trenton, N. J., For Sale or Rent.

The subscriber offers for sale or rent for a term of years the manufactory known as "THE EUREKA AGRICULTURAL WORKS," fronting 207 feet on Allen street. Main building about 60x100 feet, containing Wood-working Room, Machine and Blacksmith Shops; also all needed Wood-working Machinery; Lathes, Drill Presses, Boring Machines, Bolt Cutters, Trip Hammer, Steel Presses, Furnaces, Shears and Forges; full sets of Dies for Steel Presses; Polishing Frames, with large number of Emery Wheels; full sets of Blacksmith Tools; a good Foundry in connection with the same, about 40 feet square, with a large number of Flasks, and all the appurtenances. There are also five full sets Pelton Lever Horse Power Patterns—different sizes. Also a good set of Railway Horse Power Patterns of the most approved kind. Also full sets of Patterns for an excellent Thresher and Thresher and Cleaner. Also full sets of Patterns for the Fuller Wheel Gang Plow and Cultivator, which has a ready and extended sale. A good Engine and Boilers, excellent Shafting and Belting, in good working order. A Brass Moulder's Furnace in connection with the Foundry.

A large Barn and Wagon House, with about 200 feet of excellent sheds for storage. There is also connected with the Works a good brick Office on Perry street, with five ton Fairbanks' Platform Scales.

A spur of Bel. Del. R. R. Co. runs down the rear of the premises, from which supplies of all kinds can be unloaded direct.

Apply to *A. I. BREARLEY, Cor State and Greene Streets.*

FOR SALE,

Hardware Business in a Large Western City.

A good run of custom in retail and small jobbing.

An excellent opportunity to make money with small investment of capital.

Particulars will be furnished by addressing

R. S.,

Office of *The Iron Age,* 10 Warren St., N. Y.

For Sale, Hardware Business

In successful operation since 1845. Rare opportunity to secure an old and established business. Stock of General Hardware, Iron, Nails, &c., &., will invoice $9000 to $9000. Two story brick business room, 25x90, with cellar under all, for $3000. After first payment will make such terms as will be easy, and cannot fail to suit purchaser. Will assist purchaser at starting, if necessary. Satisfactory reasons for selling will be given.
Address, C. U. RAYMOND,
Cambridge City, Wayne Co., Ind.

For Sale, &c.

Iron Ore & Mineral Lands,

Thirty thousand acres, abounding in the several varieties of Hematite and Magnetic ores, covered with timber; limestone abundant; contiguous to one of the largest Railroads leading east and west, low freights insured; coal within 20 miles of Works. Consists of Charcoal Furnace and Forge of 200 tons a month capacity; fine manager's house, large store, stables and workmen's houses, &c. Labor 75c. a day; cost of Charcoal, 5c. a bushel; iron ore, $1·75 a ton; lime stone, 80c., all delivered at Furnace. Freight to Pittsburgh, $3·50, Baltimore, $2·40. Ores can be placed in Pittsburgh almost beyond competition. For sale, or will be operated jointly.

Address, *P. O. Box 863, Baltimore, Md.*

For Sale!

Hardware Business

In a growing manufacturing town, one of the best locations in Vermont. Business well established and profitable. Stock about $10,000, in good order. This affords an excellent opportunity for a party with small capital to secure a paying business.
Address, **W. H. BIXBY & SON, Vergennes, Vt.**

For Sale.

A clean and complete stock of Hardware, Tin and Stoves, with the good will of an old and well established trade. Room centrally located and been used for same business for 25 years past, and in one of the most substantial and rapidly growing cities of Northern Ohio. Do a business of about $75,000 per year, and will invoice about $20,000. Will sell Hardware separate if desired. Good and satisfactory reasons given for selling. Apply to, or address,
MYERS & WILLIAMS, Tiffin, Ohio.

For Sale.

A first-class Hardware Business, located in the thriving city of Bloomington, Ills. Above business has been established for over twenty (20) years, and presents to any one desirous of doing an "A No. 1" retail and jobbing trade a most favorable opportunity. Amount of stock about $15,000. Will be sold at a sacrifice. Ample reasons given for selling. For further information, address,
GEO. BRADNER, Bloomington, Ills.

To Charcoal Iron Manufacturers.

$25,000 (one-half cash, balance in one year) will buy a half interest in a first-class Eastern Charcoal Furnace, now in successful operation. To a practical iron manufacturer, who can superintend the operation at the Furnace, this offers a rare chance.

Address, **CHARCOAL FURNACE,**
Office of The Iron Age, No. 10 Warren St., N. Y.

STEAM PUMPS FOR SALE.

1 Pair (Guild & Garrison) Vacuum Pumps, 16 inch air and 10 inch steam cylinders.
1 Steam Pump (Guild & Garrison), 12 inch water and 24 inch steam cylinders.
The above has been used six months, and will be sold very cheap.
J. R. JOHNSON, Richmond Steam Forge, Richmond, Va.

FOR SALE.

An ¾ inch mill train for making Merchant, Band and Hoop Iron. Will be sold cheap.
Apply to **W. W. JONES,**
Near the Lehigh Valley Railroad Depot,
Allentown, Pa.

To Stove Manufacturers and Foundrymen.

The Carbon Stove Company, Of Burlington, N. J.,

Will sell their Foundry, with all its appurtenances, business and good will, upon very liberal and accommodating terms, offering to any party wishing to engage in the Stove or general Foundry Business a rare opportunity.

The Foundry Buildings, which are of a capacity to employ forty or more molders, are very conveniently located upon navigable tide water on one side, and the Pennsylvania Railroad, with its freight station in front, being on the direct line between New York and Philadelphia.

The Buildings, Machinery and Appliances are all in prime order, and the assortment of Patterns, &c., for Stove, Range or Heater work, unsurpassed.

Address, for terms or other particulars,
CARBON STOVE CO., Burlington, N. J.

FOR SALE.

At Lowest Manufacturers' Rates.

GUNS & SHEET ZINC,

Best German and Belgian Brands,
By *LOUIS WINDMULLER & ROELKER, 20 Reade Street, N. Y.*

For Sale, Stove and Tin Business.

Will sell, on good terms, one of the best arranged House Furnishing Stores in Canada West, at St. Thomas. The premises are roomy, the buildings having been arranged especially for this trade, with Tinsmith's workshops and benches complete for 12 men.

Present Stock about $6000.

St. Thomas is the head quarters of the Canadian Southern Railway Co. To a practical, energetic man this offers unusual advantages. Business well established and with good connection. Reason for disposal, present proprietors increasing their wholesale and retail Hardware Store next door to the above premises. Address
HORSMAN & HORSMAN,
Iron and Hardware Merchants,
St. Thomas, Canada West.

FOR SALE,

at 10c. a copy, general *Spanish Weekly Market Review,* written and published by the subscriber. 10 June, 1875, number 109, circulating in Mexico, the West Indies, Central and South America, including Brazil, Spain and Manila, on which certain standard articles of American manufacture are quoted. The undersigned is also

Translator for Manufacturers and Land Companies,

from and into the
ENGLISH, SPANISH, FRENCH, and GERMAN.
Spanish Catalogues got up correctly and with despatch. Address, **C. KIRCHHOFF,**
Metal Reporter of "The Iron Age,"
Box 3091, N. Y.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, June 9, 1875.

Generally speaking the past week has been a dull one in financial circles. The stock market has ruled irregular, alternately weak and then firm, according to advices in regard to the railroad war now being actively carried on. The stocks most actively dealt in have been Lake Shore, Western Union Telegraph, Pacific Mail, Union Pacific, Erie and North West. The money market continues very easy, call loans still ranging at 2 @ 3 per cent., while prime mercantile paper is discounted at 3½@5 per cent.

The course of the gold market has been strong and upward, principally owing to heavy shipments abroad, in great part to pay for called 5-20 bonds which are coming here. The speculative movement has been on rather a limited scale. At the close the gold market is declining without special reasons assigned. The London advices are favorable, and no prospect of specie shipments being checked. The engagements for to-day's steamer are $1,000,000.

The following table shows the extreme daily range of the premium:

	Highest.	Lowest.
Thursday	116¾	116½
Friday	117¾	117
Saturday	117½	116¾
Monday	117	116¾
Tuesday	117¼	116¾
Wednesday	117	116¼

Foreign exchange closed at 4·86¾ @ 4·87½ for bankers' sterling, and throughout the week has ruled above the specie shipping point. During the week the Treasury at New York has received $1,582,700 for customers, and has disbursed for interest $162,700. On Thursday last $500,000 gold was disposed of at 116·64½ @ 116·68. To-day the Assistant Treasurer paid out $173,000 gold for five-twenty bonds and $17,000 for interest on the public debt.

The market for government bonds has continued strong, both here and in London. State bonds have also been firmer, especially Tennessees, owing to an effort to raise the money needed to pay the July interest, which it was thought would be passed. Railroad bonds have ruled firmer. We give below the closing quotations for governments.

The stock market, as noted above, has been irregular, with prices advancing and then declining, being influenced by the railroad complications and the advices received of a near termination of the troubles, or of a still further prolongation. Below will be found a tabular statement showing the highest and lowest of to-day's quotations of active shares.

In the bank statement the principal change is an increase in legal tender notes of $1,260,000. The total reserve of the banks is $75,287,500, and the surplus reserve $16,931,475, the latter being $299,700 above last week. The following is a comparison of the averages for the past two weeks:

	May 29.	June 5.	Differences.
Loans	$281,396,500	$281,401,200	Inc. $4,700
Specie	11,492,600	10,655,200	Dec. 837,400
Leg. tend	63,371,900	64,832,300	Inc. 1,260,400
Deposits	233,890,900	233,424,700	Dec. 533,200
Circulation	19,921,100	19,790,800	Dec. 130,300

The following shows the value of exports, exclusive of specie, from New York to foreign ports for the week ending June 8, and since the beginning of the year:

	1873.	1874.	1875.
For the week	$5,614,992	$6,631,705	$5,593,109
Prev. reported	116,725,078	117,839,063	99,570,396
Since Jan. 1	$122,340,070	$124,470,768	$105,163,505

The following is the amount of specie exported the past week, previously reported and since Jan. 1, 1875, compared with the two previous years:

Total for the week	$4,418,423
Previously reported	33,474,344
Total since January 1, 1875	$37,892,767
Same time in 1874	23,405,965
Same time in 1873	22,473,660

The total imports this week are $3,452,936 less than those of last week. The dry goods are $261,501, and the general merchandise £3,191 235 below. The following table enables comparisons to be made with the two previous years:

	1873.	1874.	1875.
Dry goods	$986,823	$1,326,609	$1,274,899
Gen. mdse	5,395,408	6,958,729	4,629,708
Total for week	6,382,231	8,265,338	5,904,607
Prev. reported	186,264,579	178,706,890	151,937,284
Since Jan. 1	$192,646,810	$186,972,228	$157,841,891

Among the imports of general merchandise were articles valued as follows:

	Quant.	Value.
Brass goods	8	$1,261
Bronzes	7	1,766
Chains and anchors	7	329
Copper		691
Cutlery	45	15,911
Gas fixtures	1	256
Guns	21	5,283
Hardware	12	2,093
Iron, pig, tons	550	10,929
Iron, cotton ties	376	1,044
Iron, other, tons	598	43,419
Lead, pigs	4,381	29,170
Metal goods	129	13,715
Needles	11	5,314
Old metal		581
Per. caps	5	1,033
Saddlery	6	1,116
Steel	3,773	41,458
Tin, boxes	9,183	63,151
Tin, bbls	10	978
Tin, 400 slabs	16,473	3,259
Wire	291	8,652
Zinc	118,250	8,044

Government bonds at the close were strong. We quote:

	Bid.	Asked.
U. S. Currency 6's	122¾	122½
U. S. 6s 1881, reg	120¾	121
U. S. 6s, 1881, cou	125¾	125¾
U. S. 1862, 5-20 reg	118	...
U. S. 5-20 1862, cou	117¾	118¾
U. S. 5-20 1864, reg	118¾	118¾
U. S. 5-20 1864, cou	118¾	119
U. S. 5-20 1865, reg	120¾	120¾
U. S. 5-20 1865, cou	122¾	122½
U. S. 5-20 1865, reg. new	120¾	...
U. S. 5-20 1865, cou	123¾	124
U. S. 5-20 1867, reg	120¾	121
U. S. 5-20 1867, cou	124½	125
U. S. 5-20 1868, reg	120¾	121
U. S. 5-20 1868, cou	124¾	125¼
U. S. 10-40 reg	117¾	118
U. S. 10-40 cou	119	119¼
U. S. 5s, 1881, reg	117¾	117¾
U. S. 5s, 1881, cou	117¾	118

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	103¾	103⅝
Lake Shore	62⅞	61⅝
Rock Island	103	102⅝
Delaware, Lackawanna & Western	117⅝	117⅜
Michigan Central	66¾	66¼
Cleveland & Pittsburgh	88	88
Illinois Central	101⅝	101⅜
Wabash	9¾	9⅝
Western Union Telegraph	76	74⅞
Atlantic and Pacific Telegraph	24½	24
Northwestern	39¾	38¾
Milwaukee & St. Paul	33	32¾
" " Pref	55⅝	55
Pacific Mail	33⅛	32⅝
Erie	18	17⅝
Ohio & Mississippi	23⅝	23⅜
Union Pacific	70¾	69
Hannibal and St. Joseph	22	22
Quicksilver	17⅝	17⅛
Am. Mer. Union Express	63⅜	63⅛
Adams Express	100¾	100¾
United States Express	45	44⅝

GENERAL HARDWARE.

Although there is only a small business doing in General Hardware, a good deal of preparation is being made for the fall trade, the commencement of which is generally looked for before the close of July. The changes during the week are few. The manufacturers of Carriage Bolts held a meeting yesterday, and advanced the price of Common Carriage and Tire Bolts to discount 75 per cent. for small quantities, instead of 75 and 5 per cent., as formerly.

The Russell & Erwin Mfg. Co. have added to their line of specialties the Patent New England Sash Lock. This is the only Sash Fastener that we know of that locks securely both upper and lower Sash at any point. The following description of its working we take from the circular of the manufacturers.

Its novel feature is, it clamps both windows together as if done with a vise; with one motion it firmly holds both sashes in any desired position, so that rooms may be ventilated and windows remain locked. This is very desirable in upper rooms where there are children; the windows can be locked to keep them from falling out, and still give them sufficient room to look out, and for ventilation. Two, one right and one left, can be put in one window, if desired. It also prevents the windows from rattling and shaking, also dust from entering, and is as near burglar proof as any window fastening can be, inasmuch as it cannot be tampered with from the outside. It is not affected by the shrink or swell of the sash, is entirely out of sight, nothing being visible but the escutcheon and the handle; can be easily adjusted to houses and windows already built; it is strong enough to hold the windows, and can be used without weights or pulleys. One size will do for all kinds of sashes.

They are sold at the following list, which is subject to discount 30 per cent.:

No. 1, Japanned Lever and Plate	per doz., $2·25
No. 2, Bronzed Metal, "	" 6·00
No. 3, Nickel Plated, "	" 6·00

Heinisch Sons, whose advertisement will be found on page 11, quote Heinisch Sons' Trimmers and Scissors discount 65 per cent., and their "Standard" quality Shears and Trimmers discount 45 and 5 per cent.

The Elmira Nobles Mfg. Co. quote Nobles Mfg. Co. Augers and Bitts discount 40 @ 40 and 5 per cent.; Nobles Mfg. Co. Axes, $10·50 per dozen, net; Drawing Knives, Adjustable Handles, discount 15 per cent.; and "Watrous" Ship Augers, discount 15 per cent.

There are no changes to report in the values of Foreign Hardware. Business is very quiet.

The Nail market is in much the same condition noticed last week. The demand is light, and we continue to quote 10d., in lots of 200 kegs and over, $3·25 net.

Henry Disston & Sons advertise this week their well known Cross Cut Saws "The Great American," "The Lumberman," The "Climax," and The "Nonpareil." These goods are too well and favorably known to require much mention. We are informed that there will be no change in prices for the coming season. The Skew Back Hand Saws recently introduced by them are having a large sale, and the manufacturers are now making up a stock of these goods for the coming season.

The Scovill Manufacturing Company, Nos. 4 and 421 Broome street, have issued under date of 1st instant a handsomely illustrated catalogue and price list of Brass and Copper goods manufactured by them. We print on page 23 a description of the extensive works of this company, to which we invite the attention of our readers.

John Crane, 103 Chambers street, agent for the Greensboro Handle Works, has issued an illustrated catalogue of the goods of their manufacture. Beside a full line of Axe, Pick and Sledge Handles, Mallets and everything pertaining to this branch of the trade, they ask particular attention to their line of Carriage Wood Work. At their New York office they carry only such goods as are necessary to fill orders for immediate shipment; large orders are filled from the factory direct.

IRON.

American Pig.—There is no improvement in the tone of the market, and transactions continue limited at figures nominally unchanged, although concessions can very often be obtained. Most of the Lehigh furnace companies feel more discouraged than at any time since September, 1873, but with all the dullness they persist in keeping their furnaces in blast. The stocks of Iron are increasing, and in some places are large. It is claimed that a considerable part of this Iron is sold, but the effect on the market is none the less felt on this account. It is reported that the Warren Foundry have leased the Uhler Furnace, at Glendon, and will at once put it into blast. On the other hand, it is also reported that two of the older companies contemplate blowing out a furnace each. We note the sale of 100 tons No. 2 Foundry, of a Lehigh brand, at $35. We quote Foundry No. 1, $27 @ $28; Foundry No. 2, $25 @ $26; Gray Forge, $23 @ $25. We invite the attention of our readers to an important article on our first page, giving statistics of the production of Pig Iron in the United States in 1874, compiled by James M. Swank, Secretary of the American Iron and Steel Association.

Scotch Pig.—No material change has taken place since our last, the market still remaining very dull. We quote Coltness $31 @ $32; Glengarnock, $32 @ $33; Gartsherrie, $31 @ $33; Eglinton, $29 @ $30.

Bar.—The price of Bars at Eastern mills may be fairly quoted at about 2·7c. per lb. The rolling mills in the Lehigh Valley are fairly busy. The Delaware Mill, at Phillipsburg, is at work turning out Horse Shoes. The mills at Bethlehem are turning out Rails, both Steel and Iron, in large quantities. The Glen Mill, at Allentown, is still in the bankrupt court. The Rail mill of the Allentown Iron Company is quiet, but their Merchant mill is running steadily. The Ferndale Mill, which makes Skelp Iron a specialty, runs about half time. At Catasauqua, the Merchant mills of the Catasauqua Manufacturing Company are running steadily, double turn, confining themselves to high grades. The Plate mill belonging to this company is the only one in the valley, and is running less than half time. There is no branch of the Iron trade that has suffered more from the general depression than the Plate mills, the business being much over-done, and the price being so low as to allow of no profit. Plates may be quoted from 3¼ cents upward.

Rails.—We continue our quotation of $48 @ $50, at works, for American, though we hear of quotations considerably lower, but they are generally for an inferior quality of Rail, or owing to some exceptional circumstances.

Old Rails.—We quote $26·50 @ $27, and note sales of 300 tons at $26·50, and 300 tons on private terms.

Scrap.—The market seems to be weaker, and we quote No. 1 Wrought $31 @ $33. We note the sale of 500 tons on private terms.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.

WEDNESDAY, June 9, 1875.

Scotch Pig.—Since last Wednesday prices have fluctuated in both directions, but the market is now drooping, and there is very little business doing. The following are makers' quotations:

Gartsherrie No. 1	65/6
Coltness No. 1	67/
Glengarnock No. 1	68/
Eglinton No. 1	61/

Manufactured Iron.—The demand is falling off, and little business doing. Prices are declining.

Rails unchanged.

METALS.

Copper.—Sales for the week sum up 200,000 pounds Lake on the spot at 22¾c., and 400,000 pounds futures, June and July delivery, at 23c. There is little offering, and the market closes strong at 23c., bid, for Lake. Baltimore is moving off in a small way only at 22¾c. to 23c. Of new Lake, between 300 and 400 tons are now to hand, and are being distributed among the parties that purchased some time ago. We shall not now go into the details of the statistics which we have lately given, both in our usual market report and editorially, but refer to them. They went to show, sufficiently, we believe, that the metal is favorably situated, both in Europe and here; it has, indeed, seldom been in a better position. Aside from the cartridge manufacture, so frequently referred to, there are the new uses to which Copper is being extensively applied for war purposes and otherwise—we mean Phosphor-Bronze, which has begun to supersede the famous steel guns, for instance. If Copper depended on peaceful industry alone just at present, in Europe and here, it would probably be in anything but a promising position, but we cannot insist too much on the fact that there is a steady silent demand for it in Europe for war purposes, and that this element is more important than most people may feel inclined to admit. While, therefore, the metal is statistically sound, an extra demand exists, making up for dullness in trade. In connection with this, it cannot fail to strike us that the European limits for Lake Copper have gone on improving by degrees. And nearly all the items which figure in an export operation favor it; the high gold and exchange, and the low freight, and, independently therefrom, the banker who purchases Copper to keep his money in for a time, has every inducement to do so, the price being cheap and the interest on money low. Quotations from London for Chili Bars came by cable £82. 10/ @ £83, toward the close of last week, since when the wires have been silent on this metal. Manufactured has been steady at the following rates: New Sheathing, 30c.; Bolts and Braziers, 31c.; Bronze and Yellow Metal Sheathing, 21c., and Yellow Metal Bolts, 28c.

Tin.—We are glad to perceive that a more confident tone begins to manifest itself on the other side, accompanied by an improvement to £84 for Straits. The last mail from Holland direct now brings a clue to the low ruling at the last sale. It would seem that the leading holders of Tin were averse to pushing Banca above the figure it went at, for fear that the excellent consumptive demand might be at once checked. They preferred a good show of consumption first, and on the strength of it would then lend their powerful aid to the metal, trusting that the movement would coincide with a striking decrease of shipments from British India. This seems to have been the programme, and as there has been a considerable falling off in the shipments from Singapore since, the moment selected for a more vigorous support of Tin was, from all appearances, a singularly propitious one. We trust, in the interest of holders, that this movement may prove of more lasting benefit than its predecessors this year. Here we are still laboring under the difficulty of some parties holding more stock than they can conveniently carry during this interval of paralyzation in the metal trade, and are thus compelled to go on selling at the low figures to which Tin has been depressed. Not till they have sold out sufficient to feel at ease can we expect any very great improvement here, whatever the course of prices may be in Europe. But the moment the desideratum of their relief shall have been accomplished, a healthy upward turn may be looked forward to, provided Europe does not relapse into a drooping attitude. Straits in our market was forced off as low as 18½c., gold, an almost unprecedentedly low figure. The business has been confined to selling moderately large lots at between 18½c. and 18¾c., gold. We quote Straits 18½c. @ 18¾c., gold; English Refined, 19¼c. nominally; ditto, Common, 18¾c. @ 19c., and Banca, 23c. @ 23½c., all gold. Australian, none offering. Singapore came over the wires $22 25 last week, and $22 this week. Tin Plates are quite steady, there having been more inquiry, Western buyers feeling for bottom to the market, while in England the article still remains unsettled. Meanwhile the week's dealings in our midst have been in a jobbing way merely. We quote, gold, per box, as follows: Charcoal Bright, $8·50 @ $8·75; ditto Terne, $7·50 @ $7·75; Coke Tin, $6·87½ @ $7·12½; and ditto, Terne, $6·75.

Lead.—Although trade in this metal remains quiet as heretofore, more encouraging symptoms are reported out West, where consumption seems to take hold more vigorously of it, than in the seaboard region. Transactions here have been restricted to some 50 tons all told, at 5 90c. @ 6c., gold, for Domestic, while nothing is reported as having been done in Foreign. We quote the former 5·90c., gold, and the latter, 6¼c., gold. St. Louis quotes 6⅜c., currency, Domestic, with 45c. freight the 100 pounds. Europe has of late shown less strength, and would likely have to shade on larger lines. Manufactures we quote steady as follows: Bar, 8¾c.; Pipe, 9¼c.; and Sheet, 9½c., less 10 per cent.

Spelter and Zinc.—The development of trade in Spelter is not a satisfactory one; it does not move into consumption as readily at the combination figure of 7·15c., currency, as makers would wish it to do, and sales are to but a limited extent at 7·15c. @ 7¼c., currency, 30 days, for Domestic, while of Foreign, which we nominally quote 7¼c. @ 7½c., gold, there is none, nor has anything transpired in it to arrive. Europe is as firm as ever, and futures there are tending upward. Sheet Zinc is still a disappointment at 8⅜c., gold, with little transacting therein.

Antimony.—A steady, moderate trade is reported in this metal at 13c., gold. No new features apparent.

OLD METALS, PAPER STOCK, &c.

Old Metals are as dull as we have noted heretofore, and there is little demand from consumers for any description of stocks. The market for Rags and Paper Stock is very quiet, with the exception of Linen Canvas, which is in good request. The demand for Hemp and Grass Rope has decreased since last week, and the market is dull and declining. For other articles there is a fair inquiry. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 4½c.; Zinc, 4¼c. @ 4½c.; Pewter, No. 1, 18c.; do., No. 2, 8c. @ 12c.; Spelter, 5c. @ 5½c., Wrought Iron, 1½c.; Sheet do., ½c.; Cast, do., ½c.; Machinery, do., ¾c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton, No 1, 6c. @ 6½c.; No. 2, 2½c.; White, No. 1, 6½c.; No. 2, 4½c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5c. @ 5½c.; Gunny Bagging, 1¼c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1¼c.; Grass Rope, 2½c. @ 3c.

COAL.

The Coal market is beginning to show signs of improvement. The latest telegrams from Pennsylvania bring us the intelligence that at several of the collieries the miners have resumed work under the old basis of 1874, and that the strike is virtually ended. The Anthracite trade shows an increase for the week over last week of 39,256 tons, and the market appears to be supplied with all the Coal required for present purposes, while some of the small sizes are accumulating. There is a fair business doing in Cumberland Coal, and most of the companies are well supplied with orders. In foreign gas Coals there is very little doing, and values are nominal.

The Pottsville *Miners' Journal* says: "As some of the collieries are at work, the associated coal companies will arrange the schedule of prices for the season, and the price of coal will not advance beyond the prices agreed upon, which rates they will maintain for the season rigidly, regulating the out-put to the demand at the prices fixed upon. Manufacturers who ceased work on account of the uncertainty in the supply of fuel and the prices of the same can now commence again, as the market will be fully supplied with coal, as the ability of the regions for the balance of the year is sufficient to produce a larger quantity than the market will take, notwithstanding the suspension. On the Lehigh and Schuylkill railroads the tolls will no doubt be advanced as the season advances, to make up the losses they have sustained by the suspension; but this advance will not be put on the price of coal, but will come off the wages of the miners who caused the strike, and who must bear the loss. They cannot complain, as they were informed in January last that the longer they kept up the strike the higher the tolls would be, which would come off of their wages, and they as a matter of course ought to bear it, as one of the effects of their folly and madness in inaugurating a strike under the circumstances that prevailed at the time in the great prostration of all kinds of business."

The following are the cargo prices of company's Coal, delivered at the various shipping ports near New York, during the month of June:

	L.	Str.	Gr.	Egg	Sto.	Cht
FROM WYOMING REGION.	$	$	$	$	$	$
Lackawanna	4 90	5 00	5 10	5 25	5 70	4 70
Pittston (open market)	5 00	5 00	5 10	5 20	5 70	4 70
D. L. & W. Co's	5 10	5 00	5 10	5 20	5 70	4 70
FROM LEHIGH REGION.						
Delaware & Hudson	4 95	5 05	5 15	5 30	5 75	4 75

Freights from the above shipping ports to New York City are as follows, including the unloading:

Hoboken	40	Rondout	50
Weehawken	40	Elizabethport	40
Port Johnston	40	South Amboy	45

We quote as follows: Anthracite, $4·75 @ $5·70; Cumberland, $6·50 @ $7; West Virginia, $6·25 @ $7; James River Steam, $6·25; James River Carbonite, $9 @ $9·50; Kanawha House, $14·25; American Gas, $7 @ $8·00; American Cannel, $12 @ $14; Pennsylvania and West moreland, $6·75; Murphy Run, $6 50; Newburg Orrel, $6·50; Sterling Ohio, $10; Ince Hall, $17 @ $18; Liverpool House Cannel, $17; Liverpool Gas, $12; Newcastle Gas, $7; Scotch, $7·50 @ $8.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending June 8, 1875:

Hardware.

Brown Bros. & Co.
Gun caps, cs., 1
Boker Hermann & Co.
Mdse. pkgs., 1
Casks, 1
Degraw, Aymer & Co.
Chains, pcs., 4
Dickinson Henry,
Casks, 1
Davis, Callamore & Co.
Packages, 4
Dow, Hunt & Co.
Cases, 1
Freidricks R. & Co.
Cases, 16
Hutchinson J. W.
Guns, cs., 2
Howard & Morse,
Netting, galvanized, cs., 7
Hodgkinson & Haigh,
Per. caps, cs., 3
Hoare John,
Casks, 3
Lau & Garlichs,
Mdse. pkgs., 4
Mayer Bros.
Packages, 27
Maddock W. B.
Packages, 23
Maddock T. & Bro.
Packages, 55
Merchants' Dispatch Co.
Cartridge cases, cs., 7
McCulloch & Co.
Flies, cks., 5
Peters Bros.
Mdse. pkgs., 4
Remington E. & Sons,
Ramrods, 10
Scheuer Bros.
Cases, 11
Strasburger, Pfeiffer & Co.
Packages, 9
Van Nest A. R. & Co.
Cases, 2
Von Cleff & Co.
Cases, 5
Van Wart & McCoy,
Cases, 2
Wiebusch & Hilger Mfg. Co.
Mdse. pkgs., 5

Iron.

Cortis R. J.
Bundles, 220
Bars, 80
Eneas Jos.
Scrap, tons, 1½
Irwin R. & Co.
Pig tons, 300
Lang W. Bailey & Co.
Bundles, 220
Mdse. pkgs., 25
Mina, Parodi & Co.
Cases, 1
Moore's J. P. Sons,
Bundles, 285
Naylor & Co.
Spiegel, tons, 30
Phelps, Dodge & Co.
Sheet, bdls., 681
Order.
Spiegel, lots, 1

Steel.

Brown Wm.
Cases, 20
Haigh J. J.
Bessemer rods, bdls., 184
Hogan John,
Cases, 13
Casks, 5
Hugill Chas.
Cases, 4
Bundles, 147
Lang W. Bailey & Co.
Bundles, 263
Naylor & Co.
Tires, 24
Cases, 9
Bars, 11
Scrap, tons, 73
Prosser Thos. & Sons,
Steel and forgings, pkgs., 91
Taylor Thos.
Wire, cs., 2
Van Wart & McCoy,
Boxes, 1
West, Bradley & Cary Mfg. Co.
Wire, rods, bdls., 78
Order.
Rails, 4421
Bundles, 519
Cases, 9

Metals.

Byrne Joseph & Co.
Tin, bxs., 1050
Cort N. L. & Co.
Tin plates, bxs., 130
Dickerson J. S. & Co.
Tin plates, bxs., 1701
Eneas Jos.
Scrap, brass, lbs., 400
Fassin M. J. & Co.
Tins, cs., 1
Moran Francis,
Scrap, copper, cs., 9
Scrap, cs., 1
Maitland, Phelps & Co.
Scrap, copper, cs., 1
Naylor & Co.
Tin plates, bxs., 540
Phelps, Dodge & Co.
Tin plates, bxs., 6225
Black taggers, bxs., 290
Regulus of antimony, cks., 167
Saxton & Seabury,
Zinc, cks., 20
Windmuller L. & Hoelker
Zinc, sheets, cks., 5
Order.
Lead, pigs, 1924
Spelter, plates, 4633
Tin, ingots, 30
Tin plates, bxs., 2661

PITTSBURGH.

PITTSBURGH, June 8, 1875.

PIG IRON.—There has been an increased demand during the past week, the volume of business reported having been unusually large, and the market is firmer in consequence, although prices are not quotably higher, with the exception of a few small lots of extra mill iron, which was wanted for a particular purpose. There have been no sales here above $24, 4 months, which still may be regarded as the ruling quotation. However, it is but proper to state in this connection that producers generally now are demanding $25, 4 months, and the indications are that the mills will have to pay this figure within the next week or two, notwithstanding they, the mills, claim that the market for the product will not justify them in paying an advance for the raw article. The producing interest, however, in view of the light production and diminished stocks, appear to be hopeful of the immediate future, especially as the hot dollar question has been amicably disposed of, the puddlers having concluded not to demand it this summer, and the indications at this writing are that the mills will have to pay the advance within the next week or two; it is either this or stop, as some of them will be forced to do one thing or the other, and of the two there is not much doubt but they will choose the former.

QUOTATIONS.

No. 1 Foundry	$27 @ 28—4 mos.
No. 2 Foundry	25 @ 26—4 mos.
Gray Forge	24 @ 25—4 mos.
White and Mottled	$22 @ $22 50—4 mos.
Hot Blast Charcoal	$28 @ $30—4 mos.
Cold Blast Charcoal	$35 @ $40—4 mos.

MANUFACTURED IRON.—There is but little that is new or important to record, excepting that the general tone of the market is firmer in sympathy with the raw article. Orders are not coming in as freely as they did a month ago, nor is it to be expected, but the mills are all in operation; many of them are still considerably behind with their orders, and the outlook just now warrants the prediction that the most of them will continue in operation all summer. No change in prices; quotations may be given on a basis of 2·35c. @ 2·40c. for Merchant Bars.

NAILS.—The market remains substantially as noted in my report of last week; orders continue to fall off. It is evident that the rush for this season is about over, but manufacturers generally are still behind with their orders, and the factories generally will be kept running until about the close of the month, when it is usual to stop for a time to take stock and make repairs. Prices firm but unchanged; $3, sixty days, with the usual discount of 2 per cent. for cash.

WROUGHT TUBING.—It is understood that the Western manufacturers have adopted the new Eastern list, and there is a better feeling in consequence. For some weeks past there have been two lists, an Eastern and Western list, the Western makers objecting to some features in the one adopted in the East; but these differences, whatever they were, have been harmonized, and the outlook is now regarded favorable for a good summer trade.

STEEL.—The steel trade continues fairly active; the mills are all busy, but there is a great deal of complaint in regard to prices, which, in addition to being low, are very irregular;

each firm appears to be making its own, acting independently of each other, hence cutting is very freely indulged in, and the margin for profit is very small.

SCRAP IRON.—The Scrap Iron trade continues very dull, but, with a limited stock in the hands of dealers, prices are fully sustained. No. 1 wrought is quoted at $32 @ $33 four months, delivered free at mills.

COPPER.—Both the Copper mills here (Hussey & Co. and Park & Co.) have been running steadily during the past couple of months, and while orders are mostly small, there is a very fair business in the aggregate, all that can be reasonably expected.

The Pittsburgh *Commercial* of June 5th says: The sales reported below show a decided improvement in the demand for pig metal, with a slight advance in the price obtained for some good brands, and if the hot weather does not stop the puddling furnaces, we may expect a continuance of the demand as long as the mills continue in operation. One sale of 1000 tons is to go out of the city, and we heard of several offers to buy at $24·00, which were declined by the sellers. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM L. S. ORE.

1000 tons gray forge (to go out city)	$24·25—4 mos.
1000 tons gray forge	24·00—4 mos.
500 tons gray forge	24·00—4 mos.
500 tons white and mot., c. s.	21·00—4 mos.
350 tons close gray	23·50—4 mos.
300 tons gray forge	24 00—4 mos.
160 tons gray forge	24·00—4 mos.
100 tons gray forge	24·00—4 mos.
190 tons gray forge (extra)	25·00—4 mos.
100 tons gray forge	24·00—4 mos.
100 tons white cold short	21·00—cash.
50 tons gray forge	25·00—4 mos.
50 tons gray forge	24·00—4 mos.
20 tons No. 2 foundry	24·50—4 mos.

CHARCOAL.

400 tons No. 1 foundry Hang. Rock	Private terms.
100 tons Gray forge, Lake Superior	$34·00—4 mos.
100 tons No. 2 foundry Hang. Rock	34·00—4 mos.
80 tons No. 2 and No. 3 Hang. Rock	Private terms
25 tons No. 1 Hanging Rock	30 @ 32—4 mos.
10 tons No. 1 foundry Hang. Rock	30·00—4 mos.

ALLEGHENY COKE.

400 tons, a m xed lot	$24·00—4 mos.
100 tons Red B nk	25·00—4 mos.

ANTHRACITE.

50 tons No. 1 foundry	$28·00—4 mos.
30 tons No. 1 foundry	28·00—4 mos.
10 tons No. 1 foundry	28·00—4 mos.

BLOOMS.

10 tons Eastern Charcoal	$75·00—4 mos.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of June 8: This market has ruled uniformly dull and quiet the past week, and the sales made are, for the most part, small lots to meet the present wants of the trade, and at irregular figures. We quote the market depressed, with unchanged list.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick	2·6-10 to 2 7-10c. ₩ lb.
1 to 4½ wide by 1½ to 2 thick	
Round and square, ordinary sizes, from ¾ to 2 inclusive	2 6-10 to 2 7-10c. "
Hoop Iron, 1½ wide and upward	4¼ to 4½c. "
Band Iron, from 1¼ to 4 in. wide	3¼ to 3½c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	4 to 4½c. "
Norway Nail Rods	6¾ to 7c. "
Spark Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	15½ to 16c. "
Machinery Steel	11 to 11½c. "
Cast Spring Steel	10 to 10½c. "
Homogeneous Steel Plate	10½c. "
Peri ins' Horse Shoes, per keg of 100 lbs.	$5·62½
" Mule Shoes " "	6·62½

Comm n Horse Nails, from 14c. to 18c. per pound.

	10	9	8	7	6
Putnam Horse Nails	23	24	25	26	28c. per lb.
	10	9	8	7	6
Globe Horse Nails	23	24	25	26	28c. per lb.

R. R. Spikes 5¼ by 9-16 at 3c to 3¾c. per lb.

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of June 7: There is but *little inquiry for Iron, and the market is dull* and repressed, with small sales at about quotations, some inferior brands of Charcoal Irons being offered by outside parties at reduced prices. We quote:

Baltimore Charcoal	$32·00 @ 35·00
Virginia "	30·00 @ 35·00
Anthracite No. 1	27·00 @ 28·00
" No. 2	25·00 @ 27·00
" No. 3	23·00 @ 24·00
White and Mottled	20·00 @ 23·00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of June 7: The stock of high Irons have been so far reduced as no longer to make them quotable at lower figures than the softer grades. Demand for first-class cold blast charcoal Pig Irons is active at quotations.

Virginia cold blast Charcoal Pig Irons	$30·00 @ 35·00
" hot " "	28·00 @ 32·00
Va. hot blast Coke Pig Iron, No. 1 ex.	26·00 @ 27·00
" " " " No. 2 ex.	25·00 @ 26·00
" " " " No. 3 ex.	24·00 @ 25·00
Virginia Anthracite, No. 1 ex	27·00 @ 28·00
" " No. 2 ex	26·00 @ 27·00

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of June 7, writes us as follows: The market is dull, with small sales and a strong tendency to inside quotations. Round lots could not be sold except at some concession in price. The usual time, 4 mos., is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$28·00 @ 29·00
" 2 " " " "	26·00 @ 27·00
" 1 Mill, " " "	24·00 @ 25·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	26·00 @ 27·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	25·00 @ 26·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores	24·00 @ 25·00

HOT BLAST STONE COAL AND COKE.

No. 1 F'dry, from Hanging Rock Ores	$26·00 @ 27·00
" 2 " " " "	25·00 @ 26·00
" 1 Mill, " " "	24·00 @ 25·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	26·00 @ 27·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	25·00 @ 26·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores	24·00 @ 25·00
No. 1 F dry, from Missouri Ores	28·00 @ 29·00
" 2 " " "	27·00 @ 28·00
" 1 Mill, " " "	26·00 @ 27·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	40·00 @ 50·00
" " Tennessee Ores	35·00 @ 36·00
" " Alabama and Georgia Ores	38·00 @ 40·00
Car Wheel from Kentucky Ores	30·00 @ 42·00

BOSTON.

JUNE 5.—*Pig* has settled back into an unsatisfactory condition. The reports from the primary markets are of a character to indicate that over production threatens values, while the news of failures abroad is gossiped as likely to compel a cleaning up of several very large lots of imported pig for account of whom it may concern. This market shows rather more nerve than either New York or Philadelphia, but still, should a prompt paying buyer come seeking a 25 or 50 ton lot, he would get his Iron at "pretty low figures." The trouble is, no one wants more than 5 tons at a time, and then seek the lowest values. On such lots even slow coaches supply their needs on the fancy brands at our quotations. There are holders who, like Coffin, propose to sell as low as anybody, and so satisfactorily succeed in doing it that the pressure to prices is rather downward than upward. We quote on wharves No. 1, $29 to $31; No. 2, $22 to $27, and Gray Forge, $21 to $24. New York advices quote Hoboken $27 to $29, No. 1; $24 to $28, No. 2; and $22 to $26, Gray Forge. Foreign Pig is nominally out of the market, quoting $36 for Eglinton. *Bar* has had a fair jobbing business, ranging from $59 to $63, the average sales being at $60. The market is not particularly strong, although many dealers prefer lying idle to selling at the ruling quotations, the price not making good cost and expenses. There is not a heavy stock in the market, nor much on the way, and yet it is quite sufficient to meet all wants through the season. We learn that the Pittsburgh seller disposed of 200 tons to a consumer at about our figures last noticed. *Steel* is moving along in a small, steady way, selling in a general assortment way. We quote American Tool 15c. to 15½c.; American Machinery, 9½c. to 10c.; do. Cash Tires, 8½c. to 12½c.; Sweet's Excelsior Tire, 7c. to 7½c.; English Tool, 16c. to 17c *Copper* is again lower and offering on deliveries through June at 22⅝c. to 23c., without drawing any business from buyers. We quote 22⅝c. to 23c. for spot; New Sheathing, 30c.; Bolts and Braziers, 31c.; Yellow Metal Bolts, 28c. to 29c. *Lead* is dull and firm. We quote Domestic, 6c.; Foreign, 6¾c.; Antimony is without request, and quotes at 12c., gold, per pound; Sheet and Pipe, 9½., currency; Tin-Lined Pipe, 16½c.; Bar Lead, 9½c., less usual trade or 10 per cent. discount. *Spelter* is strong and quiet. The combination still quote $7·25, currency, 30 days, or $7·15, currency, prompt cash. Silesian is quiet, quoting nominally $7·30, gold. *Tin* is dull and easy, our quotations being still nominal. Plates are quiet. We quote Straits, 20c.; Banca, 24½c.; Refined English, 19¾c., gold. Plates are active. We quote: Charcoal I. C., $9·50 to $10; Coke, $7·75 to $8; and Terne at $8·50 to $11, gold.—*Com. Bulletin.*

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of June 4, report the iron market as follows: Our market remains same as last week. No increase in demand for Foundry or Mill Irons. Car Wheel Irons very dull. We quote as follows on 4 months:

Mo. Stone Coal, No. 1 F'dry	$29·00 @ 31·00	—4 mos.
" " No. 2 F'dry	27·00 @ 29·00	—4 mos.
" " No. 1 Mill	26·00 @ 28·00	—4 mos.
" Charcoal, No. 1 F'dry	29·00 @ 31·00	—4 mos.
" " No. 2 F'dry	27·00 @ 29·00	—4 mos.
" " No. 1 Mill	26·00 @ 28·00	—4 mos.
Tenn. Charcoal No. 1 F'dry	29·00 @ 31·00	—4 mos.
" " No. 2 F'dry	27·00 @ 29·00	—4 mos.
H. R. " No. 1 F'dry	31·00 @	—4 mos.
H. R. " No. 2 F'dry	29·00 @	—4 mos.
H. R. " No. 3 F'dry	27·00 @	—4 mos.
Massillon, No. 1 Foundry	36·00 @ 37·00	—4 mos.
" B, No. 1 Foundry	34·00 @ 36·00	—4 mos.
" No. 2 Foundry	33·00 @ 34·00	—4 mos.
Cold Blast Car Wheeel, Mo.	40·00 @ 42·00	—4 mos.
" " Tenn.	37·00 @ 45·00	—4 mos.
" " Hanging Rock	53·00 @ 55·00	—4 mos.
Mo. Charcoal Blooms	75·00 @ 85·00	—4 mos.
No. 1 Wrought Scrap	1¼c. per lb.	
Machinery Cast "	1c.	"
Stove Plates	⅞c.	"

CINCINNATI.

Messrs. L. R. HULL & Co., under date of June 7, write us as follows: PIG IRON.—Demand not quite as active as last week, but moderately good, prices ranging about the same. A large amount of Cold Blast Iron is offering at low figures. We quote:

HOT BLAST CHARCOAL.

Hanging Rock No. 1 ₩ ton.	$29·00 @	—4 mos.
" " No. 2	26·00 @ 27·00	—4 mos.
" " Forge	25·00 @	—4 mos.
Tennessee No. 1	27·00 @	—4 mos.
" Forge	25·00 @	—4 mos.
Alabama No. 1	27·00 @	—4 mos.
Missouri No. 1	29·00 @	—4 mos.
" No. 2	27·00 @	—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1 ₩ ton.	$26·00 @ 29·00	—4 mos.
" Forge	26·00 @	—4 mos.
Mahoning No. 1	28·00 @	—4 mos.
" Forge	26·00 @	—4 mos.
Am. Scotch, No. 1	26·00 @ 31·00	—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₩ tn.	$40·00 @ 45·00	—4 mos.
Missouri " "	40·00 @ 45·00	—4 mos.
Kentucky " "	32·00 @ 45·00	—4 mos.
Tennessee " "	30·00 @ 45·00	—4 mos.
Georgia " "	32·00 @ 45·00	—4 mos.
Alabama " "	32·00 @ 45·00	—4 mos.
Machinery and Forge	30·00 @ 45·00	—4 mos
Blooms	70·00 @ 90·00	—4 mos.

CLEVELAND.

Messrs. C. E. BINGHAM & Co., 25 West Main street, under date of June 7, quote the Iron market as follows, 4 mos. time:

LAKE SUPERIOR CHARCOAL.

No. 1	33·00—4 m.
No. 2	32·00—4 m.
No. 3	32·50—4 m.
No. 4	33·50—4 m.
Nos. 5 and 6	34·00—4 m.

BITUMINOUS FOUNDRY.

No. 1 Foundry	$29·50—4 m.
No. 2 Foundry	27·00—4 m.
No. 1 Gray Forge	26·00—4 m.

AMERICAN SCOTCH.

No. 1, Cherry Valley	$32·00—4 m.
No. 2, "	27·50—4 m.

MASSILLON.

Massillon No. 1	$31·00—4 m.
B—1	29·00—4 m.
Massillon No. 2	27·00—4 m.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels.*)

PARIS, May 23, 1875.—*Metals.*—Although the labor difficulties in South Wales have been removed, and the apprehensions of political complications on the Western Continent dispelled, and despite the abundance and cheapness of money, all buoyancy in the Metal trade of Europe is checked by the slowness of recuperation in various branches, and by the misgivings which have lately arisen in connection with failures in the North of England Iron regions. The obstacles that have to be overcome ere trade can revive on a solid and lasting basis, both in England and on the Continent, are manifold, and when at times we feel encouraged to express some hope and confidence in the immediate future, some new and unexpected phase looms up and upsets the more favorable anticipations we were indulging in. Under these circumstances we have no better consolation to offer than the one that Europe has a large population of consumers, that the business relations of the leading nations are extensive, and in some directions increasing, and that legitimate consumption and trade will not fail to restore transactions to their wonted magnitude after a while, and that the recovery will then prove all the more lasting for having been longer delayed. *Copper*—So far as we are able to judge at present the statistical position will have further improved by the 1st proximo, although the two last telegrams from Valparaiso show larger charters. They are likely to remain full up to the average, stocks on the West Coast being quite ample. But as the deliveries have been satisfactory on this side, and promise to remain so during the more immediate future, the metal is generally acknowledged to be favorably situated. The Paris market has been devoid of animation, and but few dealings are reported. We quote, deliverable at Havre: Chili Bars, 215 francs; Common do., 212·50; Ingots, 220; English Tough Cake, 220; and pure Corocoro Ore, 215. Nothing is advised as having been sold at Havre, but any parcel to be placed would have to go lower. After a week of firmness, great quietness again prevails at Marseilles on the basis of 220 francs for Refined Ingots. *Tin* has been on the rise at London, in anticipation, we presume, of a more favorable ruling at the Dutch Company's impending sale. We are informed from Holland, however, that no great support will be lent the latter, since a comparatively high ruling would but check the demand from *bona fide* consumers, and diminish the deliveries, which have thus far been satisfactory. People there accept the decline thus far brought about as having been unavoidable, and in conformity with the general aspect; they are consequently content to see consumption take hold of it at the reduced figure. We continue weak here at the following quotations: Banca, deliverable at either Havre or Paris, 234 francs; Straits, 220, and English, at Havre or Rouen, 225. Marseilles is but feebly supported, consequent upon the accounts from Holland. Straits there, 235 francs; Billiton, 222·50, and English, 235. *Lead.*—The uninterruptedly upward course of this metal in the London market has been arrested, and lower prices would, in all likelihood, be accepted to induce some business. This is not the case here, where we are not only firm, but have even improved a trifle. We quote French, deliverable here, 56·50, and Spanish, 55·50; none other here. Marseilles is quiet at 52 for argentiferous, and 53 soft refined. *Spelter.*—The improved tendency in the London market has been fully upheld, especially for lots to arrive, while here we also further advanced, and Silesian, deliverable at Havre, could not be obtained below 63 francs the 100 kilos. Other good brands there, 62, and here, 61·50. No change is reported from Marseilles. *Iron.*—Not much improvement is perceptible in the general markets, although some districts in France are doing better. Thus the Meurthe and Moselle has received numerous commands. Pig Iron there is quoted 72. The government stands in need of Rails in that neighborhood for a tramway to Fort Lagney. In the Compte the Iron masters have met, but what came to be transacted does not show great briskness in the demand. We continue quiet here at 220 francs, Merchant Iron, and 290 Sheet. Charcoal Iron is neglected in the Haute Marne, as it is too high, compared with Coke. Sheet Iron is wanted; Wire is also in request, and the call for Chains is of so pressing a nature that many orders cannot be filled for the present. At the North there is less prosperity; thick Sheet Iron at 265, and Merchant No. 2 at 210. *Coal.*—The companies in France do their best to uphold prices, but a further decline seems unavoidable; competition from abroad will entail it.

BELGIUM.

(*Revue Universelle*).

BRUSSELS, May 23, 1875.—*Iron.*—Our correspondents from the various districts in Belgium report little that is new for the week, if we except the decided improvement in the demand for Rails, and some extensive transactions seem to be on the eve of being closed. In railway material and locomotives business seems to be also looking up. No less than nine establishments handed in their tenders for railway cars alluded to in our last, thus showing the eagerness which exists for work. Iron prices are but feebly sustained. Severe as the crisis may be which European Iron industry is undergoing at present, our machine shops bear up against it manfully, and steadfastly devote themselves to new processes and inventions. We shall thus be enabled to make a stout front against foreign competition by the time the present troubles shall have been surmounted. A great outcry is raised in Germany against the abolishment of duties. *Coal.*—In spite of the heavy decline which has taken place, our companies are understood to be doing pretty well. If their condition cannot be called a brilliant one, it may be pronounced at least tolerably good, as Coal production still leaves them a profit, however small it may be. In Germany Coal is still declining, especially in Westphalia. Their government mines in the Saar region have lowered prices 1¼ francs.

GERMANY.

(*Borsenhalle.*)

HAMBURG, May 22, 1875.—*Metals.*—Business in general has not improved, the accounts from England not being of a nature to stimulate purchases beyond actual requirements. But for the activity in railway building and in the government shops, the metal trade would be quite stagnant among us. *Copper* remains quiet in the German markets, and we are decidedly weak here on the basis of 94 marks for Drontheim. *Tin.*—The improvement at London does not seem sufficiently stable to inspire confidence, and we shall have to await the result of the Dutch auction. Meanwhile, our markets are quiescent and nominally unaltered. *Lead.*—The German markets exhibit greater firmness, and we quote as follows: German, here, 23·75 to 24 marks; English, 24·50 to 25; and Spanish, 25 to 25·50. *Spelter.*—Holders have raised their pretensions, 1500 quintals selling here at 24·35 marks the 50 kilos. At Breslau the brand W. H. has been paid 24 to 24·25 marks, while medium ones have brought 23·25.

RUSSIA.

(*Journal de St. Petersburg.*)

ST. PETERSBURG, May 16, 1875.—*Coal.*—The deposits on the banks of the Donetz, a tributary of the River Don, are of sufficient extent and depth to supply fuel enough for the entire region of the Black Sea and Bosphorus. In 1869 the district turned out but 7,900,000 poods, of 36 pounds each; in 1870, 11,000,000; in 1871, 12,000,000; in 1872, 19,000,000; while in 1873 the quantity of 41,000,000 was reached.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, May 22, 1875.—*Tin.*—Very little doing in this metal. It is as good as certain that prices will not be pushed by the principal operators at the impending company's sale, for fear of checking the at present satisfactory deliveries to consumption. Banca, spot and next sales, 50¾ @ 50⅝ guilders, and Billiton, 47¾.

EAST INDIES.

(*Gilfillan, Wood & Co.*)

SINGAPORE, April 21, 1875.—*Tin.*—The price declined to $23 per picul, at which a fair business was done, and at closing dealers are trying for an advance. The Stanfield has cleared, and the memorandum of her cargo comprises 988 piculs Tin; the Our Annie is still loading. For Boston the Witch is still on the berth, and the Kingdom of Saxony has been taken up on secret terms. *Exchange* has further declined; we quote credits 4/2⅝ to 4/2¾.

(*Clark, Spence & Co.*)

GALLE, April 30, 1875.—*Plumbago.*—We have no alteration to report; business done is of a trifling nature. By removal of the obnoxious export duty a new impetus would be given to the trade. Fine qualities are in demand. We quote Lump, free on board, per ton, with freight, and exchange at par, £16 to £18; Chips, £10 to £11; and Dust, £6 to £6. 10/. Freight, 40/ per ton. *Exchange.*—1/10 15-16 to 1/11⅛.

(*Dummler & Co.*)

BATAVIA, April 24, 1875.—*Billiton Tin.*—On the 12th instant 9138 piculs were sold at an average of 55·10 guilders per picul, equal, at an exchange of 11·82½ guilders to the pound sterling, to £81. 10/ free on board, without commission or freight, but exclusive of insurance. Steam freight 50 guilders to 2000 kilos Tin. Shipment of Tin to the Atlantic States from July 1st, 1874, to date but 16 tons, against 19 last year. *Exchange.*—In favor of sellers at 11·70 to 11·85 guilders. *Coal.*—A sale of North Wales has been effected at 26 guilders per ton to arrive, 5 months' credit.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

SHEFFIELD, ENG., May 24, 1875.

THE TRADE OUTLOOK

can hardly be said to brighten week after week. Sometimes we are encouraged to expect a material revival of activity under certain given circumstances and sundry specified conditions, but we generally find that the requisite preliminaries don't "square up" as they ought, and we are consequently left to flounder at will in the slough of despond, which not a few iron men despair of ever being able to get through. At other times we are content to assume a grim visaged yet expectant contentment, and, wearing an apparent cynicism, which is wholly foreign to our active business habits and expectations, we hold ourselves, metaphorically speaking, in reserve and bear all the slings and arrows of such outrageous fortune with philosophic stoicism, until the situation really grows unbearable, and we once more rush into "th' imminent breach and deadly peril" to seek the bubble—business. Then, again, on many occasions we lapse into a state of fearful foreboding, and, half panic stricken, hold our several breaths in the full belief that some dire catastrophe is on the point of happening, and that our personal fate may in some not very clear manner be involved therein. I regret to say that the last "of these three "states" is that in which many business men now find themselves, several very big failures being expected in the iron trade. These will drag others down. Honorable men, or firms, get hold of bad bills which they are expected to meet, and are thus made responsible for liabilities which are not, strickly speaking, of their own incurring. I could point, of my own knowledge, to nearly a dozen such instances at this very moment. The fact is business here, and, indeed, throughout the whole kingdom, is not on a safe footing. Things have got to a low level all round, and in the struggle to keep even that level a number of persons must necessarily go under. I am no willing "croaker," but I can very clearly perceive that unless some cheerful change sets in at once, the next three months must needs be prolific in failures. In another portion of this communication I give the views of *Iron* upon the subject.

JOHN BAGNALL & SONS, "LIMITED."

It is pefectly astonishing how these "Limiteds" are coming to grief. Private firms seem to hold out, but the limited companies in the iron trade topple over like stricken ninepins as soon as adverse winds commence blowing. The majority of these concerns were floated on the fair waters of prosperity and unwonted activity three years or so back, and were often unnecessarily burdened with capital. As soon as trade began to fall off the wary ones began to sell out; vendors got rid of their voluntary shares, and the real interests at stake were left to the guard of persons who have proved, in many instances, fully incompetent to steer clear of disaster. These remarks are suggested by, but are not meant to have the least relevancy to the particular case of John Bagnall & Sons, "Limited," Staffordshire. The shareholders of this company met at Birmingham last week, and were told that there had been a loss of £10,559 on the year's working. The causes of this loss were explained to be "slackness of trade; a disastrous strike of sixteen weeks, duration, and a heavy fall in iron." The report was adopted; but there was an exciting discussion on the report of the Investigation Committee that not less than £85,000 had been paid by the vendors of the concern to a Mr. Carlton, of Manchester, for "promoting" it as a limited liability company. A good deal of forcible language was used by the justly irate shareholders; and it was ultimately determined to file a bill in Chancery praying that the contract be reseinded.

NEW SYSTEM OF FIRE PROOFING.

I quote the following from the *Engineer* of May 22d: "A system of fire-proofing just patented by Messrs. Taylor and Murray, of Clerkenwell, is thus described by the inventors: This patent secures floors, galleries, pillars and roofs, from injury, in the midst of a conflagration, however intense. It acts automatically; under its application a fire can be rendered a means of its own extinction; iron—which under any other mode of use is perhaps the most dangerous element in fireproofing—becomes a guarantee of safety, and inasmuch as a building constructed upon its principles protect itself, a single assisting engine can perform as much service during a fire as several otherwise. It is simply based upon the fact that so long as water evaporates freely away from a conductive vessel, that vessel cannot be heated to above 212° of Fahrenheit; thus even an egg shell upon burning coals, or a thin paper tray over a flame, while retaining water, are preserved inact. In this patent, a sheet or stratum of water—in due communications with sources of supply—and of any preferred depth—usually some three or four inches—is spread continuously over the bottom of each floor, roof and gallery; and all pillars supporting these are hollow, and in free communication with the water of the floor or roof above—thus always from that source. Under the mode of using this invention, especially recommended by Messrs. Taylor & Murray, each floor is composed of a greater or lesser number of tanks, troughs and hollow girders; formed either of thin wrought iron or steel—say about ⅛ of an inch in thickness—and similar or varying in shape, size and length, while of the same depth. Those having been first duly fitted, tested and varnished or painted at their place of manuture, are put up *in situ*, side by side. As each tank takes its position, angle iron is placed within, around the top and bottom; and it is then firmly screwed to the adjacent members of the system by two series of hollow nuts, or tubes, passing through the angle irons and tank sides, together with any additional strengthening plate, where interposed. The apertures are carefully secured against leakage by washers of specially prepared felt in cupped steel. Of these two series of nuts, the lower one pierces the tank sides as near to the bottoms as can be conveniently arranged, and it provides for the free flow of water in all directions. The upper series is placed equally near to the top edges, and thus, when the floor coverings are down, allows of an equally free diffusion of vapor to—ultimately—the open air. It will be seen that the whole of these tank sides thus stiffened by angle iron and bound together, have become so many doubled plate girders and cross struts, possessing great bearing strength in all directions; and this strength can be yet indefinitely increased by the interposition of third plates, as already adverted to, between portions crossing great spaces. To form the upper surface of these floors, and secure the chambers above against damp, sheets of corrugated iron or steel are either laid over the tank tops, with strips of prepared felt or caoutchouc inserted between the overlappings, &c.; or otherwise, where preferred, they can be leaded down with an easily fusing metal. Upon these again, squares of planking, of dimensions preferred, and easily removable, are superposed; these squares being constructed of two thicknesses of boards nailed together crosswise, to prevent warping."

THE WORLD'S PRODUCTION OF IRON.

The foreign secretary (Mr. David Forbes, F. R. S.), of the British Iron and Steel Institute, publishes the following statistics and statement in the *journal* of that Institute: "In our last report will be found an approximate estimate of the total production of cast iron on our globe, as shown by the latest official returns from the different countries; and this return, which gives the total of 14,885,488 tons, is, we believe, a very close approximation to what the actual production of the world was in 1873. More recently, in the September number of the *Bulletin de la Societe d' Encouragement*, Professor Gruener has presented a similar estimate of the total production of cast iron and wrought iron and steel, for the year 1872, which we here reproduce:

	Cast Iron. Tons.	Wrought Iron. Tons.	Steel. Tons.
England	6,723,387	3,500,000	500,000
United States	2,250,000	1,602,000	143,000
Germany	1,600,000	1,150,000	209,000
France	1,180,000	883,000	130,000
Belgium	655,565	502,567	15,284
Luxembourg	250,000	.....	.....
Austro-Hungary	400,000	300,000	49,250
Sweden and Norway	300,000	191,800	12,000
Russia	360,000	245,000	7,304
Spain	34,500	35,600	250
Italy	25,000	24,000	.....
Canada, India, etc.	100,000	70,000	.....
Total	13,878,452	8,503,977	1,064,988

"In the above figures, some 220,000 tons of pig iron, and 150,000 tons wrought iron, of the amounts credited to Germany, were produced in the annexed provinces of Alsace and Lorraine, and a small quantity of puddled steel is included in the figures showing the production of wrought iron in Italy. Of the total quantity of steel, about 700,000 tons were manufactured into the form of rails—Professor Gruener estimates the total production of steel in the year 1873 as about 1,250,000 tons."

PATENTS OR NO PATENTS.

Hardly ever was there a more unpopular measure than the Bill now before the House of Commons, proposing the abolition of the patent laws. Not a single petition has been presented in favor of the proposed enactment, whilst petitions against it have emanated from the Sheffield Associated Engineers; the Sheffield Trades Council; United Shipping Trades Council, of Liverpool; Bury Trades Council; Philosophical Society, of Glasgow; Walsall and district Trades Council; Oldham Amalgamated Trades Council; Dundee United Trades Council; Glasgow United Trades Council; inventors in Dundee. Petitions for alterations have been presented by members of the Birmingham Chamber of Commerce and Leeds Chamber of Commerce.

THE SCOTCH IRON TRADE.

The Scotch pig iron market opened and remained quiet during the first three days of the week, but on Wednesday afternoon, just prior to the close of business for the day, a slight improvement became manifest, and was maintained during the remainder of the week, 63/ to 63/6 being quoted on Friday evening. The shipping business of the week was fairly large, 12,659 tons being the total registered, about double the quantity for the corresponding period of 1874. Makers' prices are weaker on the week.

Messrs. Wm. Colvin & Co. (Glasgow) May 25th, 1875, report: "There was a slight improvement in the warrant market on Wednesday and Friday last, business being done from 63/ to 64/. This week there has, however, been a renewal of the depression, and the price fell on Monday from 63/6 to 63/. To-day there has been a fair amount of business done from 62/6 to 62/, closing at the lower quotations. The undernoted prices show shipping iron as again slightly lower; it has now reached a moderate level, and is cheap as compared with pig iron in other districts of the country.

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	64/	63/
Gartsherrie "	66/6	65/6
Coltness, "	70/6	65/
Summerlee, "	68/	64/
Langloan, "	68/	64/
Carnbroe, "	66/	64/
Monkland "	64/	63/
Clyde "	65/	63/
Govan, at Broomielaw	65/	63/
Calder, at Port Dundas	68/	64/
Glengarnock, at Ardrossan	71/	64/
Eglinton, "	63/	61/6
Dalmellington, "	63/	62/
Carron, at Grangemouth, selected	70/	...
Shotts, at Leith	68/6	66/
Kinneil, at Bo'ness	66/	63/
Bar Iron	£9. 10	
Nail Rods	£9. 10/	

SHIPMENTS.

	Tons.
Week ending May 22, 1875	10,180
" May 23, 1874	6,705
Increase	3,475
Total increase for 1875	40,294

"THE CRISIS IN THE IRON TRADE."

Under this head *Iron* has the following remarks:

"In regard to the present condition of the iron trade, it is impossible not to be struck by the many and important differences between investment in it and in other commercial ventures. At the period when Neilson invented the hot blast, the wildest visionary would not have ventured to predict the present enormous production of iron in this country. Gradually at first, and then more rapidly and confidently, our iron masters extended their operations until iron has rivaled cotton as the great national product of Britain. This great advance has not been made without undergoing occasional checks; but these periods of depression have been of slight moment when compared with the progress which has been made by leaps and bounds. From time to time misgivings have been expressed as to the healthiness of these sudden developments; but, however depressed for a while, the iron trade of England has invariably displayed a power of recuperation unknown to other industries. The losses endured during bad times have been recovered tenfold on the revival of business, and during exceptional periods of prosperity immense fortunes have been realized. Much of this elasticity has doubtless been due to the fact that the capital acquired in the iron trade has only in rare instances been withdrawn from it—the proprietors of great works having felt, not only the desire to keep on making money, but a certain satisfaction in their important position—retreat from which would reduce them, however great their fortune in cash might be, to comparative insignificance. The lord of many blast furnaces is an important personage, a private gentleman with some half million sterling is nobody, in this busy England of ours. Hence has grown up a generation of moneyed workers, rich enough to tide over evil times, and pay the loss, and courageous enough to undertake new and sound business, and make up the deficit. In only one respect does the iron trade present any analogy with ordinary pursuits in which operators trade up to their capital, and this is a growth of the few years of remarkably good fortune which preceded the present crisis. Eager to participate in the profits of a great and growing business, capitalists, not too well supplied with cash, rushed into the trade at its acme of prosperity, and companies were formed to carry on and extend the business of sound old firms, which had always traded under their capital, and thus had a reserve to fall back upon in evil times. The late prolonged dullness, and the present actual depression, due mainly not to the perturbations of English commerce, but to the collapse of our iron and steel trade with America, has found out the weak points in the harness of many—has perhaps killed off the weaker brethren, who in halcyon times might have waxed fat like their more hardy predecessors. Other causes beside simple commercial fluctuations have contributed to bring about this result. Labor difficulties, which may be patiently endured and seen to the end by 'solid' men, have proved fatal to those whose purses were not long enough to carry them through a period of enforced inaction. This truth becomes manifest when we compare the operations of iron masters dependent on the market for fuel with those of their competitors who are at once coal owners, pig iron makers and producers of manufactured iron and steel. While the first have been languishing the second have prospered—moderately, perhaps, but still have prospered. Again, those who have felt strong enough to close their works rather than undertake unremunerative contracts are now in a position to profit by the good times which have already given signs of arriving. From all this we conclude that the iron trade, being subject to sudden and severe fluctuations, demands more than any other industry the employment and careful administration of large capital."

MIDDLESBORO' TRADE REPORT.

Instead of making any comment of my own, I cheerfully adopt the report of the Middlesboro' Chamber of Commerce on the trade of that town and district during the month of April. It runs as follows: "*Pig Iron.*—In the Middlesboro' district at the end of April there were 87 furnaces erected, of which number

75 were in blast. Five were building, as follows: Robson, Maynard & Co., two at Redcar Iron Works; Swan, Coates & Co., one at Cargo Fleet; and Bell Bros., limited, two at Port Clarence. The make of pig iron during the month amounted to 107,730 tons, which is an increase of 8567 tons on the production during March, or nearly 9 per cent. The stock of pig iron on April 30 was only 19,673 tons—a quantity 10,635 tons less than that held at the end of the previous month. The shipments to foreign parts were 33,434 tons, as compared with 23,021 tons during the corresponding month of last year. The iron was sent chiefly to Germany, Belgium, Holland and France. The shipments coastwise reached 20,213 tons, as against 20,687 tons in April, 1874. There was, therefore, a total increase in the shipments of 19,939 tons. Scotland received considerably more than half the coastwise cargoes, and Wales about one-fifth. Trade during the month was of a fairly satisfactory character, but lately there has not been much doing, and the prices that have been quoted are merely nominal ones. No. 3 is now offered at 56/, cash, and other numbers are in proportion. At this time last year No. 3 was selling at 87/6, cash. *Manufactured Iron.*—The shipments of this, as compared with last year, show a falling off of 5465 tons, the quantity dispatched in April this year being only 12,589 tons, which was sent chiefly to Norway, Denmark, Russia and Spain. The demand for all kinds of finished iron has been good during the month. Large orders for rails have been given out in the district, and the rail mills are all regularly employed. This may be accounted for to some extent by the stoppage of operations in South Wales. Quotations for rails are also somewhat stiffer, but it is not reported that many orders have been taken at the advance. Plate manufacturers have been doing fairly well, and the trade is now steady, with satisfactory prospects. Prices here are slightly higher. Bar makers have profited by the strike in South Wales. *Iron Founding.*—The iron founders are not very well off at present, as they have got the bulk of their old orders worked off, and find it difficult to secure new ones, except at a reduction in prices. *Engineering.*—The shops are moderately well employed, but business is not equal to the average. *Cut Nails.*—There is a steady demand in this department, but prices are unchanged, though they are too low at present to be satisfactory. The works are in full operation. *Bolts and Nuts.*—Makers have plenty of orders on their books, and can keep their works in full operation. The demand is exceedingly satisfactory, and good prices are being obtained. *Wire.*—The mills are kept pretty regularly going, and the demand is good, this being the best time of the year for wire workers. The ordinary country prices are readily obtained. *Coal and Coke.*—The exports from Middlesborough during the month of April were as under:

	April, 1874.		April, 1875.	
	Coal. Tons.	Coke. Tons.	Coal. Tons.	Coke. Tons.
Foreign	3,035	2,817	2,892	2,149
Coastwise	1,463	123	3,955	228
	4,498	2,948	6,847	2,377

Household coals are not in much request, but a considerable quantity of manufacturing fuel is used, and quotations remain stationary. Coke prices, which were raised some time ago, continue unchanged."

TRADES OF SHEFFIELD.

Owing to the Whitsuntide holidays, which began at noon on Saturday week, and continued in almost every instance until Thursday morning—in others all this week—there has been little or no business doing in any branch of trade. The interval has, as usual, been made use of for effecting such repairs or renewals of machinery and fittings as were needed in the iron, steel and other works.

It will thus be inferred that all kinds of quotations must be taken as being purely nominal. Hematite pig iron is quoted at the following prices by the vendors: Maryport hematite, No. 3, 80/; No. 4, 80/ to 82/6; No. 5, M and W, 82/6; Bessemer, No. 1, 82/6; No. 2, 80/; and No. 3, 80/; all per ton less 2½ for prompt cash. Millom Bessemer, No. 1, 87/6; No. 2, 85/; No. 3, 83/; ordinary No. 3, 85/; No. 4, 82/6; No. 4, 81/; No. 5, 88/; M, 92/6; and white, 87/6, per ton on four months' terms, or with the customary 2½ off for cash. Local foundry and forge pigs are nominally a couple of shillings easier, owing to the very considerable declension in values undergone during the week by Scotch brands. Prior to the cessation of operations on Saturday week, the majority of the foundries were fairly well employed.

In finished iron generally there have literally been no transactions, so far as your correspondent has been able to learn, merchant irons of all kinds having been, as a matter of course, completely neglected. Just at the close of last week, however, a change took place in prices, the alteration being in a downward direction and, therefore, deserving of some notice on the part of the trade. Two leading firms of merchants have, I am credibly informed, made the change, but as I have not myself seen the new price list of one of the twain, I shall content myself with giving that of the other, the Midland Iron Company (Limited). This company's works are at Masborough, near Sheffield, and it has an agency for the sale of merchant iron at Sheffield. Its own productions are of a fair medium quality, so far as the class of iron immediately in question is concerned. The amended quotations are: Bars, £9. 10/; best edge tool, £10. 10/; best plating iron, £10. 10/; hoops, £11. 10/; and sheets, £14. 10/ per ton; all delivered within the limits of Sheffield. Bars are thus lowered to the extent of 10/ per ton, but hoops and sheets are not at present varied from their former figures.

The annual report of the directors of the Charlton Ironworks Company, Sheffield, is not a very cheerful document for the shareholders. It states that the loss on the year's operations has been about £13,816. Of this £800 has been paid for the cancelling of a cinder contract; £791 has been lost on the dead rent of the company's ironstone field in Northamptonshire; £2894 is put down as depreciation in the value of stock in trade; £237 for depreciation in the value of duplicate stock; £2588 for bad and doubtful debts; £3929 as loss on trading; and £2577 as the vendor's interest, etc. The capital of the company is £125,000, of which £104,605 have been called up. At the ensuing meeting the question of voluntarily winding up the company will be discussed, or, alternatively, whether the capital shall be increased.

The report of the Parkgate Iron Company states that the iron trade has been in a very depressed state during the past year, and continues so. The company's profits have, nevertheless, been sufficient to allow of a dividend of £8 per share being paid, free of income tax.

The coal trade is still very dull, there being little or no demand. Prices are, consequently, very weak, and likely to come down again very shortly.

In the cutlery branches there was nothing whatever done during the whole of the week, not a few of the manufacturers being glad of the opportunity thus afforded for closing the works during that period.

TRADES OF BIRMINGHAM AND STAFFORDSHIRE.

At Birmingham, too, the holidays were very closely kept during the first three days of last week, and, in a good many instances, a resumption of operations was postponed until to-day. The shipping branch of the hardware trade is, however, said to be improving, more particularly with Norway, Sweden, Denmark, Russia, France, Australia and South America. Merchants trading with Brazil have, however, been hit pretty hardly by the failure of Messrs. Mana & Co., of Rio, who are likely to pay in full ultimately, but have been compelled at present to suspend payment. Coffin furniture is advanced by 8 per cent. net, but both iron and brass bedsteads have been reduced by about 5 per cent. net. There is no alteration whatever to record in the price of or demand for iron.

THE SOUTH WALES DISTRICT.

The leading works in South Wales are beginning to get into operation again. At Cyfarthfa two mills are going full time; at Dowlais the Goat Mill is at work on iron orders, and the steel department has at present plenty to do in executing commissions already on the books. Plymouth is also in partial operation, and has orders which will be put in hand as soon as the wages business is effectually leveled. Llandaff, Bookers' and Treforest are in active employment, and Rhymney has better times in sight. The tin plate establishments at Treforest and elsewhere are executing a considerable quantity of work.

THE METAL MARKETS

have been quiet during the week, but values have been maintained. Von Dadelszen & North's report says: "*Copper*—Chili is 10/ to 20/ better, business having been done at £82. for g. o. b., cash, and £82. 10/ for Urmeneta and g. o. b. to arrive. The charters for first fourteen days May are telegraphed as 2100 tons Wallaroo, sold at £90. 10/ f. o. b., and Burra £88 in warehouse. India sheets done at £93 to £93. 10; tough, £88 to £89. *Tin*—A steady business doing for consumption and export. Straits sold at £82. 10/, one or two small lots at £83; Australian, at £81. 10/; Billiton, at £82; English ingots, £90 to £91. In Holland, Banca, 50¼f.; Billiton, 47¼f. to 47¾f. *Tin Plates* again rather easier and demand slack. *Lead* a shade easier; sellers at £23. *Spelter*—Some business reported in Silesian at £24 for ordinary brands, and at £24. 5/ to £24. 7/6 for specials. *Quicksilver* firm, at £12 per bottle.

The *Mining Journal* remarks: "*Copper*—This metal has been steady throughout the week, but owing in some measure, perhaps, to the Whitsuntide holidays, and also to the absence of news from Chili till toward the close of the week, the amount of business actually transacted was limited. It is probable that the returns of the latter at the end of the month will place copper in a yet more favorable statistical position. At the beginning of the week 1268 tons of copper ore sold at Swansea at an average price of 16/1½ per unit, the produce averaging 17 13-16 per cent. Cape produce yielded 16/5¼ per unit, the percentage averaging 28¼. The price of Chili bars, g. o. b., being £82, usual cash terms. This has been about the price at which Chili bars have stood throughout the week. Burra has changed hands at £87. 10/. English tough is quoted £88 to £89; best select, £89 to £90; strong sheets, £94, and India 4 by 4, £93. 10/. Yellow metal is quoted 73/4 to 73/8. The Chili charters for the first half of May were announced by telegram on Thursday last, being in all 2100 tons, and disposed as follows: 800 tons of ore and regulus, and 900 tons of bars for England, and the remaining 400 tons of bars for the Continent. The charters being deemed to be somewhat large, the market is quiet, but holders are firm, in the belief that there will be improvement in time, and that quotations meanwhile are not likely to recede to any important extent. £22. 10/ has been realized to-day for Chili bars with extended prompt. *Lead.*—This market is hardly so firm as it has been, and although quotations are maintained, sellers would be prepared to submit to some trifling reduction in price in order to secure business. Good soft English pig, £22. 15/ to £23; soft Spanish, without silver, £22 to £22. 5/, and with silver, 5/ higher. *Spelter.*—Business has been done in Silesian at £24, ex. warehouse in London, and £24. 7/6 at outports, May and June delivery. No change in English. *Zinc.*—145 tons London rolled has realized £27. 12/6 to £27. 10/. *Quicksilver.*—The last quotation for this metal is £12 per flask. *Tin.*—This market has been very firm throughout the week, but without much doing until Thursday, when the demand improved, and business was reported in Straits at rather higher prices. To-day the market has made further progress, and £84, usual cash terms, is the price paid for Straits tin; Australian, £83. 10/; English ingots, £90; bars, £91 to £92. The market closes strong. Tin Plates are quiet.

Latest Liverpool prices are these:

Iron: f. o. b. in Liverpool, per ton.

	£	s.	d.	£	s.	d.
Merchant bar	8	10	0 @	8	15	0
Merchant bar, in Wales	8	0	0 @	8	5	0
Staffordshire	9	0	0 @	11	15	0
Hoop	10	10	0 @	11	10	0
Sheet	12	5	0 @	13	0	0
Nail rod	9	5	0 @	9	15	0
Bar, best crown	9	0	0 @	9	5	0
Boiler plates	11	5	0 @	12	0	0

Tin Plates: f. o. b. in Liverpool, per box.

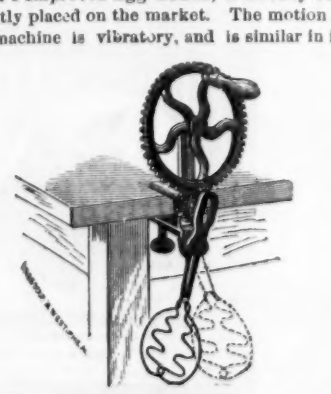
	£	s.	d.	£	s.	d.
Charcoal, I. C.	1	14	0 @	1	17	0
Coke, I. C.	1	5	6 @	1	8	0

Copper: Delivered in Liverpool, per ton.

Bolt and Sheathing	£95 @	£96
Tile	88 @	00
Tough cake	90 @	00
Best selected	92 @	00

Miller's Improved Egg Beater.

The accompanying illustration represents Miller's Improved Egg Beater, a novelty only recently placed on the market. The motion of this machine is vibratory, and is similar in its



operation to the old fashioned method of beating eggs with an ordinary wire egg whip. The manufacturer claims for this Egg Beater that its vibratory motion, obviating the whirl given the eggs by the rotary egg beaters so commonly used, will do the work more rapidly than any other machine of its class on the market. It is claimed for it that it will beat the white of eggs into a stiff froth in half a minute. The motion is produced by a wrist pin on the pinion operating in a slot at the upper part of the beater bar. The beater is of tinned wire, and the article is well finished, strong and durable. J. Clark Wilson & Co., No 81 Beekman street, are the sole agents for these goods in this city. They offer them to the trade at $4 per dozen, discount 10 per cent.

Brass Works of the Scovill Manufacturing Company, Waterbury, Conn.

The manufacture of brass and the countless articles made from that metal is a business for which the State of Connecticut, and especially the city of Waterbury, has long been famous. The treatment of the subject in all its bearings would be a work of immense magnitude; our present purpose is simply to sketch the progress of a single firm in this industry.

The works of the Scovill Manufacturing Company are situated in Waterbury; the buildings fronting on Mill street present a continuous line of 800 feet, being for the most part three stories in hight, and substantially built of brick. To the rear extend wings and many out buildings; a canal, half a mile in length, leads water to their wheels, improvements of the water-power costing the company $60,000 within a few years. The water drives two wheels of about 100 horse-power each. Additional to this there is a steam engine of 100 horse-power. 400 operatives are constantly employed. The value of goods continually on hand, made or in process of manufacture, is more than a half a million of dollars. The capital employed by the company is about a million and a quarter. The business was established as long ago as 1802. The capital at first was very small and for a long time the growth was slow. Even 40 years ago the business was comparatively small, all of it being done in one wooden building two stories in hight, and in another one story wooden building, part of which was occupied as a grist mill. The growth of the concern to its present size forms an interesting part of the history of American manufactures, and one extremely creditable to mechanical ingenuity, energy and skill. Here the brass business in this country was first begun. That it should have succeeded so well in spite of limited means, local disadvantages and inexperience, is surprising. This success is due in some degree no doubt to a judicious protective tariff, but still more to the energy of the managing men, the invention of labor saving machinery by skilled mechanics, and the great perfection and beauty of the goods, which their taste and skill has enabled them to produce. Their goods now go to all parts of the world, and are sold in Birmingham itself in the very face of the British lion.

One important branch of their manufacture is button making. To this one of their largest buildings is exclusively devoted. They make a specialty of military and naval buttons, and all other uniform buttons, such as are worn by militia companies, firemen, railroad men, schools, colleges, and societies throughout the country. They supply, to a large extent, the Cuban and the Spanish-American government with buttons for their troops. They also make a great variety of buttons for liveries, from designs and dies to order. A corps of designers and die-sinkers is employed on work of this sort, and in getting up new styles of buttons to suit the taste of the ladies. The wonderful variety of designs accumulated in this way during the course of years can scarcely be conceived without a visit to their cabinet of samples, which contains buttons of every imaginable pattern, gilt, silver-plated, nickel-plated, bronzed, enameled, oxidized, silvered, stamped, chased, or brightly burnished. There are also buttons of glass and metal combined, or of metal and cloth. Also an infinite variety of covered buttons; lasting, worsted and brocade for men's wear, and silks and velvets of all shades for ladies' wear.

Another department of the works is devoted to the making of wrought brass butts and hinges. The machinery for making them works automatically, and is the invention of mechanics in the employ of the company. These hinges range in size from three-eighths of an inch to seven or eight inches. The cheaper ones are used for furniture, inside blinds to houses, &c., &c. More expensive ones of ornamental patterns, gilt, silver-plated and engraved, are made for use on pianofortes. Hinges of special patterns are furnished to order. Many are made specially designed for sewing machine cabinets. Very strong and heavy ones are made for use on ship board, where iron is objectionable from its liability to rust.

The company have just completed machinery for the manufacture of furniture casters, made entirely from wrought metal, by processes of their own invention. The peculiar merit of the casters consists in the introduction of small iron balls, acting as friction rollers, and thus causing the caster to turn more readily than the ordinary casters. Being of wrought metal they are also much stronger than the common ones, which are made of cast metal.

A large department is devoted to the manufacture of kerosene oil burners, lamps and lamp trimmings. In this as in other branches of work this company has had marked success and is noted for the perfection of its work. A great variety of burners and lamps, as well as large quantities, are made by them, and are shipped all over this continent and also to Europe.

Thimbles are made here of silver plated brass, and of German silver. They are formed by powerful machinery from a flat disc of metal, after which they are turned, milled and burnished. The better grades are made with the same care as the best silver thimbles, and are for practical purposes equally good.

Mattings and preservers for photographs have been made in this establishment for many years. The demand since the introduction of card pictures has greatly decreased, but at one time the making of these goods was a considerable part of the business of the company. It was originally taken up in connection with the manufacture of plated metal daguerreotype plates, in the manufacture of which this company were pioneers.

Plated metal is still one important branch of their manufacture. It is used for coach lamps, reflectors and many other articles. It is made by uniting ingot copper and a plate of silver, the whole being rolled into a thin sheet, leaving one side coated with the silver, while the other shows copper only. In Europe the silver is united to the ingot by heat, but the Scovill Manufacturing Company have a secret process by which the union is made without heat and without leaving the silver liable to flake off in working, as is often the case with the foreign articles. Metal plated in the same way with platinum or gold is also made here; also a white metal silver plated, an article never successfully produced by any other manufacturers. For the making of this plated metal the company have a mill detached from their other buildings, which is devoted exclusively to this work, the rolls being made especially for it and highly polished.

The "drawing department" is the name given to that part of the works devoted to the manufacture of brass ferrules for handles, canes, fish-rods, etc. Seamless tube, solid drawn, is also made here, being drawn up from sheet metal without the use of any solder. It is greatly superior to the ordinary brazed or soldered tube, being sounder, smoother, and of much greater strength.

The portion of the works employing the most capital, and on the whole the most important of all, is the rolling mill, a building 200 by 120 feet, adjacent to which is the casting shop, of 100 by 75 feet. It employs 100 men and produces annually about 2,000,000 pounds of sheet metal. This metal is all rolled cold, and is of the finest quality. Part of it is brass, and part is gilding metal, oroide, German silver, etc. It is rolled of all thicknesses, down to that of the thinnest writing-paper. It is made of all qualities and tempers to suit the almost infinite requirements of manufacture. Some is made tough and ductile for spinning and stamping into irregular shapes. Some highly tempered, for springs or reeds for musical instruments, while other is made to be easily drilled or turned. This list is adapted for the works of clocks or similar purposes. The brass for the inside works of all American watches is made here, as is also the nickel metal for the same purpose. The oroide is a close imitation of gold, and is much used by jewelers. The German silver, otherwise called albata, is used to some extent on show cases, for the ornamentation of steam fire engines, for cornets and other musical instruments, etc.; but by far the largest part of it is used for making silver plated spoons, forks and other table ware. For this latter purpose thousands of pounds are consumed daily. In the manufacture of most of the articles above mentioned the Scovill Manufacturing Company have introduced many original processes and perfected special machinery.

PHOTOGRAPHIC MATERIALS.

This branch of business, though of comparatively recent origin, has become very extensive, and now embraces several distinct departments, either of which is of sufficient magnitude to require separate and individual management.

This company has from the earliest inception of the art of photography, employed a heavy amount of capital and able and intelligent talent in the development of the various requirements of the craft, and have manufactured and imported every article used in the business.

Divided into its respective heads the departments may be named as follows:

Photographic apparatus, embracing the camera obscura, or camera box, with its various styles of holders or dark slides, and stands for gallery and field photography. The principal factory of the company, devoted exclusively to this department, is that of the American Optical Company, which is not only the largest in the world, but deservedly enjoys the reputation of turning out the most perfect apparatus which has ever been produced, while its many new and original inventions are unique in practical usefulness, beauty of design and elegance of workmanship. Necessary to the attainment of such excellence, so fundamentally important to the successful prosecution of the art, this establishment employs a large force of skilled artisans, who have undergone a long and careful preparatory course of practical instruction. Apart from the very extensive demand in our own country for the products of this factory, the exports to the principal countries in Europe form no inconsiderable proportion of the business of the company. The actual birthplace of the art of photography, Paris, was among the first to discover the superiority of the inventions of this establishment, while Germany, England and Scotland followed closely in her wake, evidencing the high estimation in which these wares are held in the very art centers of the Old World.

This company also own the extensive factory known as Samuel Peck & Co., at New Haven, Conn., where less elaborate and lower priced articles of photographic apparatus are made, such as are most commonly used in galleries of more moderate pretensions, yet in all parts of mechanical accuracy and durability of construction, its products stand unrivaled. At this factory are also made cases, frames and trays. This department embraces all that relates to the exterior finish of the daguerreotype, ferrotype, ambrotype and photograph, and comprises cases of almost infinite variety of Morocco, velvet, paper and composition; frames, passepartouts and trays of beautiful construction and elaborate and costly design. The many appliances required in the manufacture of these goods are very expensive, involving, in some instances, a cost of $500 and upward for a single die from which the case or frame is made.

In the early history of the art, American photographic chemicals were unknown, and this company were the first to import such as were required. As the art grew in importance and magnitude, many discoveries were made by American experts, and the necessary chemicals were manufactured to a considerable extent by this company, more especially compounds such as collodions, salts of gold, silver, and various other metals, varnishes, developing preparations and enamels, which surpassed foreign products not only in point of excellence but in cheapness, so that their preparations have today an unrivalled reputation, and are in active demand in all quarters of the world where the art is practiced.

In the department of importations may be enumerated English, French, and German photographic glass; photographic papers, plain and albumenized, and certain unmixed chemicals, such as hyposulphite soda, pyrogallic acid, etc., which, owing to the comparative cheapness of foreign labor and certain material, can be brought into the country at a lower cost than they can be made here. This company supplies these foreign goods to photographers and jobbers in photographic materials, and they are the recognized headquarters for everything pertaining to the art.

Under the head of accessories comes photographic backgrounds, plain in woolen, distemper and oil, and painted in imitation of landscapes and interiors; position chairs, of original and exceptionally chaste and exquisite design; tables, pillars, imitation rocks and rustic seats, photographic curtains of silk and reps, of varied styles and qualities. Without particularizing or attempting further to classify the products of this branch of manufacture and importation, it is believed that this company has done more to develop the art of photography and facilitate its prosecution than all the combined agencies beside, subsidizing not only every known instrumentality which invention has devised, but fostering every resource which money and the progressive instincts of a refined and cultured race have developed.

This company are also sole agents for the Phœnix Plate Co's. ferrotype plates, on which the ferrotype picture is made. These plates are made in black and chocolate colors by a patented process. The products of the Phœnix Plate Company not only exceed in magnitude those of all combined manufacturers beside, but are unequalled in quality.

The company's principal warerooms are located at Nos. 419 and 421 Broome street, New York. The building measures 50 by 109 feet in area, is steam heated and supplied with steam elevators and every modern business convenience. The basement extends a distance of 25 feet beneath the court yard in rear of building, affording safe location for the boilers and engines, and below the front sidewalk are spacious vaults for storage purposes. They also have depots for the sale of their manufactures at No. 137 State street, Chicago, and No. 112 Federal street, Boston.

We are aware that this brief sketch conveys but an imperfect idea of the extent, variety and complicated nature of the business carried on by the Scovill Manufacturing Company, but it may afford some conception of the amount of energy, enterprise, skill and executive ability required to conduct such extensive operations. From small beginnings this company have built up a business which has added very materially to the prosperity of the city where their principal works are located; have bestowed direct benefit upon every consumer of their goods by lessening the cost of production while improving the quality of the articles; and have extended the reputation of American inventive and mechanical skill, not only within our own borders, but to many distant lands.

Iron Making in the South—Cold Blast Charcoal.

CARTERSVILLE, GA., June 2, 1875.

To the Editor of The Iron Age: In Southwest Virginia there are several small cold blast charcoal furnaces, chiefly in Wythe county—three, when in blast, run by water-power, and two by steam. Those run by water have been very profitable. The ores used at all these are limonites (brown hematite) of good quality. In one of them, an old stack near Mr. Graham's house, probably not less than 25,000 tons of iron have been made, the blast run by a wheel 20 feet in diameter, turned by the force of a stream but little more than a respectable spring branch; blowers square wooden. These furnaces may all be safely said to make a ton of pig with from 150 to 160 bushels of charcoal, the cost of which varies from 7 to 10 cents per bushel. Capital, part Northern; product from 2¼ to 4 tons each per day; only two now in blast.

In Lincoln county, N. C., there is one cold blast charcoal furnace of about 4 tons per day capacity. The singular magnetic ore of that region, called catanbarite, is used, and an excellent iron made. Other furnaces in the neighborhood not running.

The first furnace belonging strictly to the region I am discussing is near Bristol, Tenn., about three miles from the railroad. It is known as the Bushong furnace, and is now leased by Mr. E. Gallup, formerly of Connecticut. The stack is 30 feet high with a 7¼ foot bosh. The ore used is a species of red hematite, slightly magnetic, and fuses very readily. It has the singular property of breaking into squares and oblongs; a piece weighing two or three hundred pounds may be broken into pieces an inch or less square, all of perfect shape. Mr. Gallup pays $1 per ton rent for the property, about 25 cents per cord for wood, and 50 cents for ore. His misfortune is in having to haul both some distance, and then haule the pig three miles to the railroad; nev-

ertheless he makes iron very cheap, and can safely calculate on a ton from 160 bushels of pit coal. He uses water-power. He commenced the iron business eight years ago in Southwest Virginia without a dollar of capital by leasing a furnace. He has done well and made money, and he says he has gained what he never had in Connecticut, good health. Produces about 5 tons a day.

Nearly straight west from him is the Cumberland Gap furnace, and near it the Speedwell furnace, each of capacity to produce about 3 to 3½ tons per day. The first is owned by some Northern men, who made a failure, but they now contract the making of the pig to some of the country people at the nominal price of $20 per ton, and pay them in goods from the store. They are near to the ore, but haul their coal 2 to 3 miles. The Speedwell is in the midst of a good timbered country, but haul ore 3½ miles. They claim to make pig at $14 per ton. The first about $15. These furnaces get their iron to market during freshets, by floating down Powell's River to the Clinch, then down the Clinch to the Tennessee, and down that river to Chattanooga. Including hauling to the river it costs them $7 per ton to get their pig delivered in Chattanooga. Their ore is red fossiliferous. Both are now in blast.

There are no other charcoal furnaces on the northwest side of the Tennessee River; but returning to the south side, in Carter county, near Elizabethton, is the old Blair furnace, not now in blast. This property was bought, and the furnace run, by a couple of enterprising, Western men, but they went in debt for 30,000 acres of land, which they did not need, and when tight times came they failed. It has been several times reported as sold to English parties, but as yet without truth. Distant 10 miles from railroad, a little farther southwest, in Washington county, is the furnace of the Knoxville Car Company. It is about 28 feet high, 7½ feet bosh, with water-power and modern blowers; makes about 4 tons per day of excellent iron, which is almost entirely used by the Knoxville Car Wheel Company. The ore is of the limonite species, chiefly small shot and pulverulent. Hauls eight miles to the railroad.

This completes the list of cold blast furnaces in East Tennessee, and it is plain that none of them can place their pig in market at Chattanooga for less than $22, and it is probable that none except the Cumberland Gap furnaces can do it so low as that amount. The chief trouble of all of them is bad roads in winter, but it pays better to be thus troubled and get the wood cut, coal burned and hauled at that season than to use up capital in carrying large stocks. Labor is but a small item at all these furnaces, as they are off from railroad lines, and hands can be gotten at low rates, and are almost entirely paid off in goods at large profits.

In Georgia there is now running but one strictly cold blast furnace. In this, Bartow county, there are four which were running up to the panic. One, on the Western and Atlantic Railroad, known as *Roger's, is 36 feet high*, with a 9 foot bosh. It was originally constructed by a man who pretended to know everything, but had never seen a charcoal furnace, hence he put in the steep anthracite bosh. After various failures the interior was remodelled and the boshes flattened. It has never made its proper quantity of iron, because of bad management and utter want of knowledge of the iron business. The last blast it did not run on Sundays, stopping up, and only 6 tons per day was made. It had been demonstrated that with proper management a ton of good iron could be made with 140 bushels of charcoal. The quality of the iron when made from the Guyton Hill ore (the great bank I heretofore mentioned) was good, but ignorance and the mixing in of an inferior ore near the furnace often spoiled the product. About $40,000 is invested in this furnace—all Southern. They now wish to get capital to fit up so as to run on coke. Ore has been delivered in wagons at $2·75 per ton, but by a narrow gauge road connecting from the Guyton Hill to the M. & A R. R., an ore ranging from 55 to 60 per cent. metallic iron could be delivered at $1 to $1·50 per ton. Limestone is immediately at the furnace. The cold blast charcoal iron heretofore made at this furnace has probably cost not less than $25 per ton, as frequently 160 to 170 bushels of coal were used, and the cost per bushel never under 8 cents. Steam-power, with one horizontal blower 60x60 inches.

On Stamp Creek are three furnaces run by water-power, all about the same size, and only one now in blast, that being owned and run by Mr. Ward, formerly associate editor of the *Mining Journal*. It is 28 feet high, 7½ feet boshes, blown with one tuyere, blast from wooden blowers, power from a water wheel directly under the blowers. He uses oven and pit coal, though now mostly the former, and makes about 3 tons of iron per day on 150 to 160 bushels of coal. His charges, when I was last there, were 450 lbs. of roasted ore, 12 bushels of coal and 30 lbs. of limestone. He hauls part of his ore 3½ miles, and his limestone about the same distance, and hauls his pig 10 miles to the railroad, at this place. The returning wagons take back a load of ore. He pays most of his labor from the store. I think his iron costs him about $22 at the railroad, from which must be deducted store profits. He has about $20,000 invested in land and fixtures, teams and wagons.

The first iron furnace in Georgia, Alabama, or Tennessee was erected in this county, and on Stamp Creek, by Jacob Stroup, a Pennsylvanian, in 1838. It is near where the creek runs into the Etowah, in by no means a favorable location except for water-power, but the old man made a great deal of money selling iron at $13 per ton. The stack still stands, and is the property of the Etowah Company. Later, Dr. Lewis built the three furnaces I have mentioned above, and made a large fortune operating them. A narrow gauge railway is chartered to run in two miles of them up the Iron Valley, and when built will not only enable them to deliver their pig on the railroad for $2 less than at present, but will open for operations some of the largest beds of limonite ore in the United States, surrounded, too, by vast tracts of timbered land.

On the Selma, Rome and Dalton Railroad there is only one strictly cold-blast charcoal furnace, though the pig made by the small furnace at Shelby, during its last blast, was run with air at so very low a heat that its quality was extra good and claimed to be truly cold-blast. Bibb county furnace is located near Brierfield Station, and has probably had as varied fortunes as any like establishment in the world. First built during the war, it was burned by Gen. Wilson, then rebuilt in 1866, and badly managed until, on the 29th of last month, it was sold under foreclosure sale. Originally intended for a charcoal furnace, it was placed in charge of Gen. Gorges, chief of ordnance of the late confederacy, who may have been a good judge of iron, but knew nothing about making it. He undertook to run it on raw coal, or poor coke, or coke and charcoal, and once on billets of wood. The result was the utter annihilation of about $275,000 of money, all Southern. After the assignment it was run under lease by Capt. T. S. Alvis, who made an excellent iron, but had no capital to back him; he started operations with $60. The ore is chiefly of the species of limonite called "liver ore," and from it the best iron has been made. It had a reputation beyond any iron in the South. The landed property is about 6000 acres land, of which about one-half has been cleared of wood. The stack is 40 feet high, with boshes 10 feet in diameter; the steam is furnished by three boilers, return flue, 30 feet long and 40 inches diameter; the blast by blowers 8 feet long 4 feet diameter, driven by a steam cylinder 4 feet by 16 inches. Another stack near is incomplete. A tram road runs three miles to the railroad, where there is a small rolling mill. Pig iron was formerly made here at the following rates:

160 bushels of charcoal, 10c.	$16 00
2 tons roasted ore	5·00
Lime (25 per cent. of amount of ore)	62½
Labor	4·50
	$26 12½

But now Capt. Alvis claims that everything may be reduced 20 per cent., as labor is much cheaper; this would make cost of ton $20·80 at the furnace. Transportation to Louisville, $5 per ton of 2000 lbs. With due deference to Capt. Alvis' opinion, I must say that I do not think pig can be made at this furnace as at present located for less than $22 per ton, and there must be a constant annual increase.

In stating the hight of these cold blast charcoal stacks, it must be remembered that I state outside measurement. All of them have a throat from 2 to 2½ feet in hight, which, of course, reduced their working capacity. The interior shape is that of a short egg, flat boshes and steep hearths. I should have stated, too, that from Cartersville the Stamp Creek furnaces can put their iron in Louisville at $4·50 per ton, and in Cincinnati for the same on completion of the C. S. R. R.

On the Coosa River, below Rome, Ga., and thought in Alabama to be best reached from that point, are two furnaces classed as cold blast, Cornwall and Round Mountain, though the latter has put in pipes under its boilers, and claims only to warm its air a little. In fact many of the furnaces classed as cold blast have pipes over their trunnel head. Cornwall, however, is strictly a cold blast furnace, and has made a very superior quality of pig iron, but its financial affairs have been poorly managed. It was built during the war with detailed conscripts. As an evidence of want of common sense in its construction, the water is brought half a mile in an open ditch, and then to get to the wheels passes a distance of one hundred and fifty feet under a high hill in a dirt tunnel partly timbered. Then the wheels are so set that a slight rise in the river checks their power very materially, while a little higher rise floods their cast house. Then the stack is built 3½ miles from the ore, and 8 to 3½ from the great wooded belt. Notwithstanding all these disadvantages iron has been made here, for the average of one month, with 142½ bushels of charcoal to the ton, and at a gross cost of $20·60. I do not think the average of a year will show so well. In winter they are troubled with bad roads—I might say fearfully bad. I shall carry with me for years the memory of a night ride from the river to the furnace, and they said the roads were good to what they had been. The bottom simply drops out of them in winter, and they dry to powder in summer. A little steamboat has been put on the Chattanooga, though, which will hereafter haul pig to the Coosa, when the roads are bad. The stack is 38 feet high with boshes 9 feet in diameter, blast driven by two turbine wheels, and has four blowers, each 6 feet by 3, only two used at a time. The make when running regularly is 10 tons per day. Ore, red fossiliferous, of that known in Tennessee as the White Oak Mountain vein; 2 tons or less make a ton of iron; they skin the vein, using only the richest. They claim cost of $2 for ore to the ton of pig; charcoal they claim costs 8 cents per bushel. These figures are no doubt correct, as they pay no royalty on either, nor taxes or interest on the land they come from. The charge is 600 lbs. of ore and 70 lbs. of limestone—I could not get the charcoal definitely. The property is in the hands of a trustee, and now run on lease by Capt. McElwain, whose interest it is, of course, to make as much money out of it as possible. The future cost of iron at this furnace, if it is run in the future, must come near to $25 per ton. Transportation to the Coosa is $1, and thence to Rome $2·24; from Rome to Louisville $5. Total, at present furnace cost, $28·84.

The Round Mountain furnace was rushed up in a hurry on the remains of an old stack which had existed during the war. As originally put in blast it was 45 feet high with 9 feet bosh, and a bell and hopper top, and sundry other foolish arrangements. It was put in blast in the spring of 1874, and did very badly, when Capt. Wurtz, of Stonewall, was asked to take temporary charge and remodel it. He took out the inwall and drew in the boshes to 8 feet 6 inches, also put in a smaller hearth, and threw out the bell and hopper. It then did very well making 8 tons per day of first-class iron. Not content with this the managers put in air pipes under the boilers, and increased the yield to 12 tons per day, as they say, without injuring the quality of their pig. The furnace and property has cost $200,000; the machinery is all of the best character, the blowing engine by Nobles, having an air cylinder 48 x72 inches; the boilers and fittings from Ainslie, Cochran & Co. are four plain cylinders 50 feet long and 40 inches diameter. The plain truth is that they spent money for two furnaces before they knew that one would pay. Their ore costs them $1·50 to the ton of iron, limestone about 50 cents, and charcoal calculated at 8 cents per bushel—10 cents will probably cover it, as some is hauled 4 to 5 miles over roads where the oxen or mules mire belly deep in winter and die of thirst in summer. Nevertheless, had the stack been properly built and properly located, a little narrow gauge road run into their timber and to the river (half a mile), and ovens been constructed, I believe they could have made pig iron cheaper than any furnace in the United States. The capital is all Southern, and Mr. Sibley, the president, is a good financier. The record of three months' running of this furnace since the warm blast was put in gives 128, 133⅓ and 136⅓ bushels of charcoal as the respective averages. It is claimed that they now make iron at $14·45 per ton, but I calculate as follows:

Charcoal, 133 bushels at 8 cents	$10·64
Ore	1·50
Limestone	·30
Labor at furnace and office (superintendent and president each $2500), per ton	4·00
Interest	3·33⅓
Total	$19·97⅓

Now, I do not calculate interest on the $200,000, but on $12,000, the sum of interest for the year which the furnace lay idle or was in trouble. The cost of delivering their iron in Rome and Louisville is the same as from Cornwall.

In the western part of Middle Tennessee there are four cold blast charcoal furnaces, two of them eligibly located in Stewart county, near the Cumberland River, the others not near transportation, one in Dickson, the other in Lewis county. Col. Killebrew, in his Resources of Tennessee, states that the two in Stewart county, in 1873, made pig with about 175 bushels of charcoal to the ton, which cost 8 cents per bushel, the ore to a ton costing $5. My record of one of Hillman's furnaces is:

190 bushels of charcoal at 6 cents	$11·40
2½ tons of ore at $2	5·00
Limestone	·60
Labor, superintendent and office	2·04
Total	$19·04

The usual price for common labor in that region now is not over $1 per day; labor about the furnace $1·25 to $1·50. Charcoal is contracted for to be delivered to furnace at 6 cents, ore at $2 per ton, limestone at small cost, labor and all to be paid part in cash and part in goods from the store.

HENRY E. COLTON.

Iron from Africa.—The Italian bark Nostro Padre, Captain Palazzo, is now discharging a cargo of iron ore from Bona, in Algeria, consigned to the Pennsylvania Steel Company, whose works are at Baldwin, near Harrisburg. The African ore from Bona possesses peculiar qualities which adapt it to the manufacture of Bessemer steel, the specialty of the company. The Nostro Padre is discharging the ore into the boats of the Susquehanna and Seaboard Through Line. We are informed by Mr. Charles E. Dilkes, general manager of the line, that the entire cargo will be on the way to the steel works by Saturday next, a proof that the port of Philadelphia affords every facility for the rapid handling of cargo, which fact is being appreciated by masters and owners of vessels consigned to this port.—*Philadelphia North American.*

The Globe Mill, at Cincinnati, is running single, making sheet, plate and merchant iron, producing 150 tons per week.

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32 Cal.
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HERCULES IRON CUTTER.

No. 1, weight	16 lbs.,	cuts	¾x2	inch, or	½	inch round or square	Price	$25·00
No. 2, "	165	"	⅝x3	"	⅝	" "	"	50·00
No. 3, "	350	"	¾x4	"	1	" "	"	75·00

This is by far the most powerful Iron Cutter in use which can be worked by hand, having three times the capacity of any other machine which sells at the same price. The No. 3 machine occupies a space of 12x30 inches; when in use additional space must be had for the lever to work in. We send two sets of knives with each machine—one for square and flat, the other for round iron and steel. By using the knives adapted to it, round iron is cut without being flattened. One man can cut the largest size iron named above, but two would be required for steady work. It does not take a minute to change the knives or to shift the machine from large to small sizes.

AUGUSTA, GA., March 3, 1875.

MILLERS FALLS CO.—Enclosed find draft for amount of invoice, January 7. We would have sent the amount before, but did not have an opportunity of trying the Iron Cutter until a few days ago. It is one of the best machines we ever saw. Yours, truly, MOORE & CO.

Office of the ATHENS FOUNDRY AND MACHINE WORKS,
ATHENS, GA., February 18, 1875.

H. L. PRATT, President.—Dear Sir: Enclosed find draft made payable to your order by Messrs. Childs, Nickerson & Co., in payment for Iron Cutter. We have put our Cutter to good service, and find it cuts readily 1¼ round, and 3½ x ⅝ square iron. C., N. & Co are pleased with theirs, say it will save many a blow and cold chisel in their iron house.

Truly, yours, E. NICKERSON, Agent.

We make a satisfactory discount to dealers, and warrant the cutters to do all which we claim for them. Send for prices.

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No. 78 Beekman Street, New York,

Sole Proprietors and Manufacturers of the

Barber Self-Fitting Bit Braces, Millers Falls Vises,
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TUBE SCRAPERS, FAMILY TOOL CHESTS,
Patent Adjustable Tool Holders, Mitre Boxes, Ratchet Braces, Breast Drills, etc.

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These Anvils are manufactured at the oldest Anvil Factory in this country They are *superior* to the best English, or other Anvils, on account of the peculiar process of their manufacture (invented and used only by this concern), and from the quality of the materials employed.

The best English Anvils, after a time, become hollowing on the face by continued hammering in use, on account of the fibrous nature of the wrought iron—causing it to "settle" under the face.

The body of the Eagle Anvils being of crystallized iron, no such settling can ever occur; and the steel face, therefore, remains perfectly true. Also, it has the great advantage that being of a more *solid* material, and consequently with less rebound, the piece being forged receives the full effect of the hammer, instead of a part of it being wasted by the rebound, as with a wrought iron anvil. An equal amount of work can, therefore, be done on this Anvil with a *hammer one-fifth lighter* than that required when using a wrought iron anvil which is more elastic.

The working surface is in *one piece* of JESSUP'S BEST TOOL CAST STEEL, which, after being accurately ground, is hardened and given the proper temper for the heaviest work. The *horn* is covered with and its extremity made *entirely of steel*. The body of the Anvil is of the strongest grade of American iron, to which the cast steel face is *warranted to be thoroughly welded and not to come off*.

REDUCED PRICE LIST. ANVILS weighing 100 lbs. to 800 lbs., 11c. per lb.

Smaller Anvils, ("Minims.")

	No. 0	1	2	3	4	5	6	7	8	9
Weighing about	10 lb.	15 lb.	20 lb.	30 lb.	40 lb.	50 lb.	60 lb.	70 lb.	80 lb.	90 lb.
Price,	$3·50	$4·25	$5·00	$5·50	$6·50	$7·50	$8·00	$9·00	$10·00	$10·50

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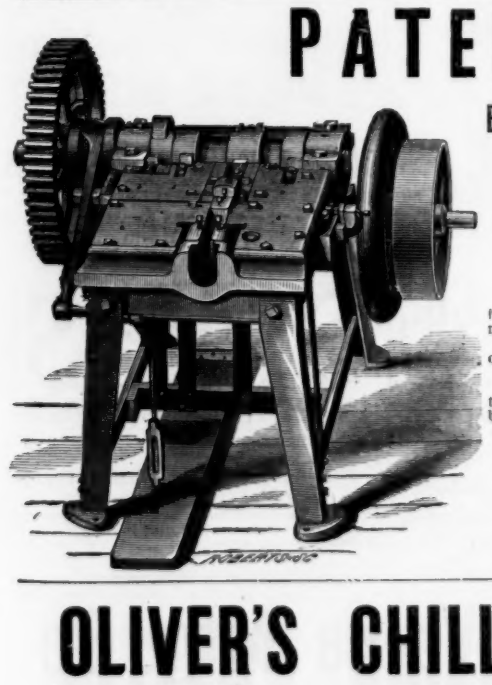
FISHER & NORRIS, Trenton, N. J.

PATENT BOLT HEADER



Every Railroad Shop, Car Shop, Machine & Bolt Shop, Mower, Reaper & Plow Manufacturer, should have one.

Three sizes of these machines are made, viz:

No 1 will make bolts from ⅛ inch down.
No. 2 " " ¾ "
No. 3 " " 1¼ "

The three sizes if run together would require from 2 to 2½ horse-power.

The variety of shapes that can be made are only limited by the ingenuity of the owner. A few minutes only are required to make a change from one shape or size to another. All dies are made of the best Cast Steel, and can be redressed many times.

T. Button, Countersunk, Rivet and Round Head; Plow and Track Bolts, &c., are made at one revolution. Square and Hexagon Heads require from 3 to 5 revolutions.

For Simplicity, Durability and Compactness it has no equal.

A Boy can learn to run it in a few hours. The bolt is made on the heated bar and cut off in the machine to any length from 1 to 10 inches; if greater lengths are desired, they should be cut before heating. Either Round or Square Iron may be used.

Will use up as much iron as can be heated in any ordinary blast fire.

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These implements, though but four years before the public in their present form, show the following remarkable record:

1506 were sold in the season of 1871. 7472 were sold in the season of 1873. 30,000 will be made for the season of 1875.
3049 " " " 1872. 14,976 " " " 1874. For full descriptive circulars, address,

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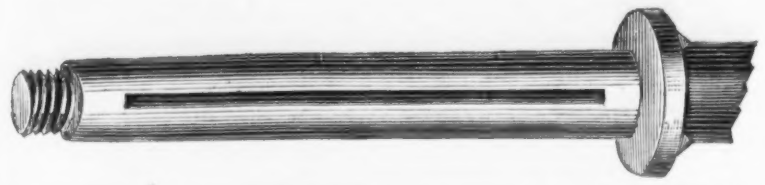

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Lubricating Axles, as per, cut have proved superior to any other style; the continuous recess catches all foreign substances which may gather inside the box, and also serves as a receptacle for lubricating compound until drawn out by the attraction produced by the revolution of the wheel. It being placed in the central upper part of the axle, there is no possibility of small fragments working down the sides of the arm and grinding, as experiment has proved, occurs on axles made with detached recesses distributed over the upper surface of the arm. Springs all grades at lowest market prices.

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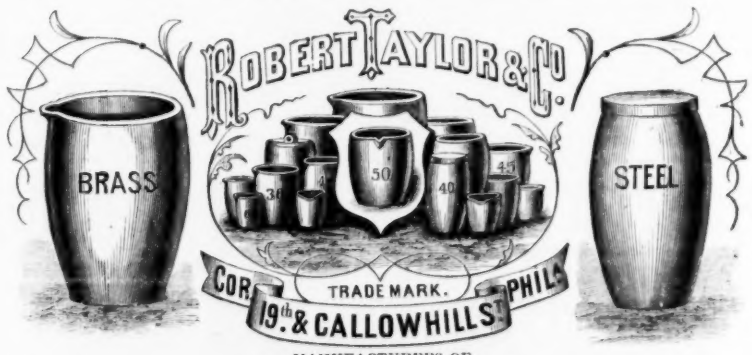

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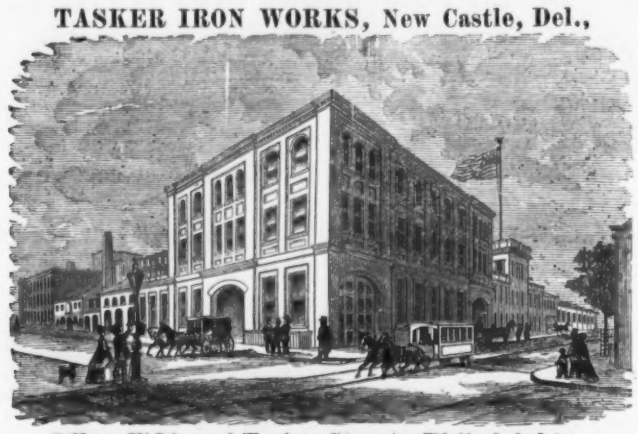

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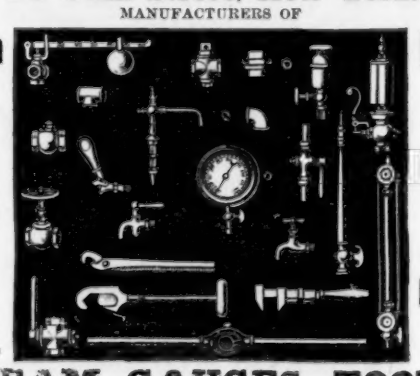

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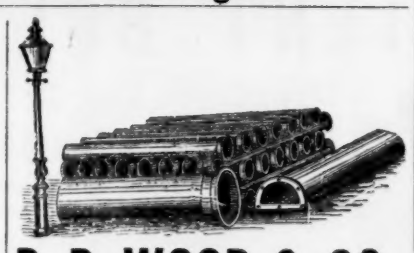

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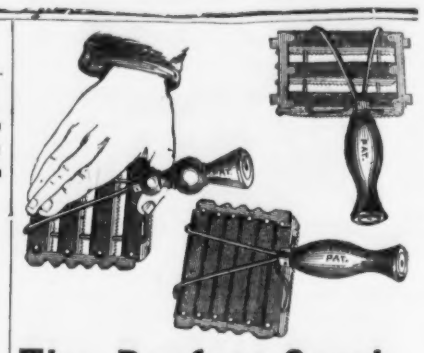

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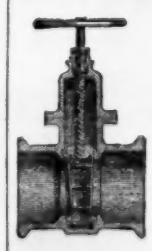

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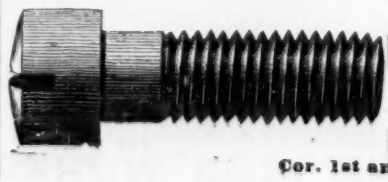

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and index to Advertisements.

American Iron Steamships.—Launch of the "City of New York."

The twentieth steamship from the yard of Messrs. John Roach & Son since October, 1871, was launched at Chester June 5th. Her name is the "City of New York." She will be of a capacity of 3500 tons, custom house measurement, with accommodations for 153 first cabin and 1200 steerage passengers. It is just 30 days since the "City of San Francisco" was launched from the ways then alongside of those which the "City of New York" left to-day. The latter named vessel is in all respects exactly the duplicate of the one by the side of which she was constructed. Her keel was laid November 10th, 1874; and another—the third—ship of precisely the same type and size will follow her into the water within about a month. Each of these three ships is 353 feet long, by 40¼ feet wide, with a depth of 39¼ feet from the hurricane deck and 31 feet from the spar deck. They will all be barque rigged, and each will spread 17,000 square feet of canvass.

These ships will be provided with ten metallic life boats, whose aggregate carrying capacity will be for 350 persons, and with life rafts which will carry 500 persons.

The machinery proper consists of a pair of compound engines, fitted with a surface condenser and six boilers, and with separate engines for working the air and circulating pumps, and also the feed and bilge pumps. By this arrangement the main engines have no work except to turn the propeller. The high pressure cylinder is 51 inches in diameter, and the low pressure 88, each having stroke of piston of five feet. This plan has the great practical value of rendering impossible any breakage of the pump gear from the "racing" of the propeller engines in heavy weather—thus insuring always the regular and easy operation of the pumps. The six boilers are cylindrical in form, and measure 13¼ feet in diameter, by 10½ feet long, tested for a working pressure of 90 pounds per square inch. There are three furnaces in each boiler, and the aggregate amount of grate surface in all the boilers is 380 square feet, and the entire heating surface is 12,000 square feet. The propeller is of the Hirsch patent, and has a diameter of 25 feet. The shaft is 120 feet long by 16 inches in diameter. The maximum performance of the engines will be 65 to 70 revolutions per minute, with a speed of vessel in good weather of 15 to 16 knots per hour. In case of accident serious enough to require it, the air and circulating pumps can be used as bilge pumps to clear the ship of water. These are in addition to the two No. 8 donkey pumps specially provided in case of leakage or fire. On the main engine there are two large bilge pumps, arranged to be connected or disconnected at will. On the pumping engines are four bilge pumps; and in addition to these the air circulating pumps can, at a moment's notice, be converted into bilge pumps also. Other bilge pumps of large capacity can be driven by the hoisting engines when it may be necessary. The aggregate power of all the pumps to free the ship of water is 100,000 gallons, or 357 tons per minute. There are seven bulkheads which divide the steamship into eight water-tight compartments.

Resumption at Joliet.

The Joliet *Republican* says:

After nearly two years of idleness the Joliet Iron & Steel Works are again in full operation in every department. The steel works commenced work again, after over a year of idleness, on Oct. 1st, 1874, but the iron mills have remained idle up to Monday, May 17th, when they commenced running on single turn. The second day run they turned out 75 tons of rails, which, considering the fact that the mills had been idle so long, and the men were most of them green hands or out of practice, is a good showing for a single turn. On Monday of this week they began running double turns, and as they have plenty of work now on hand and more in prospect we can safely predict steady business for the future. Such is the condition of the iron mills.

The Bessemer steel works and rail mills are running to their full capacity, and the work done last month we challenge the world to beat. As the statement made at the time was doubted by some of our Eastern exchanges, we give the following official figures taken from the books of the company.

Bessemer Department Joliet Iron and Steel Works, converting mill product for the month of April 1875:

Two 5 ton convertors: Turns run, 48; blows made, 928; number tons of steel produced, 536 7820 2240.

It is also shown on the 19th of the same month, they turned out 274 tons of steel at 2 turns, running 47 blows.

During the same month the steel rail mills turned out over 3800 tons of best Bessemer steel rails, and they are now averaging from 170 to 180 tons per day. Since the starting of the steel works in October last, the increase in production has been steady and uninterrupted, and the iron rail mills give promise of the same encouraging showing.

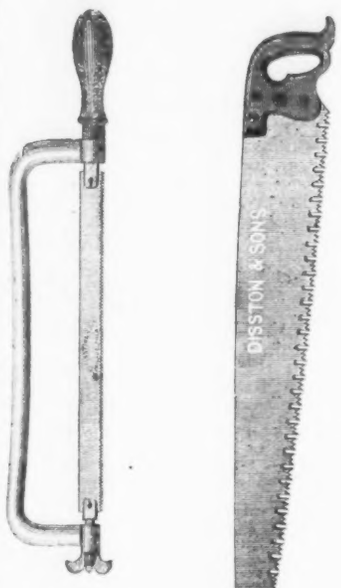
While the iron works of the East are many of them idle, and others only running half turns, it is a subject of congratulation for our city that our mills are thus active, and prosperous, the more so as a very large proportion of the hands employed are residents here and personally interested in the welfare and prosperity of Joliet. It is we believe largely due to this fact that the works have made such a record since last started; the men are individually interested in the prosperity and success of the mills, and work to win. In fact the only trouble ever experienced with the men, so far as we have been able to learn, was with tramps and those who came from other parts, and made trouble by their loafing and drunkenness.

HENRY DISSTON & SONS,

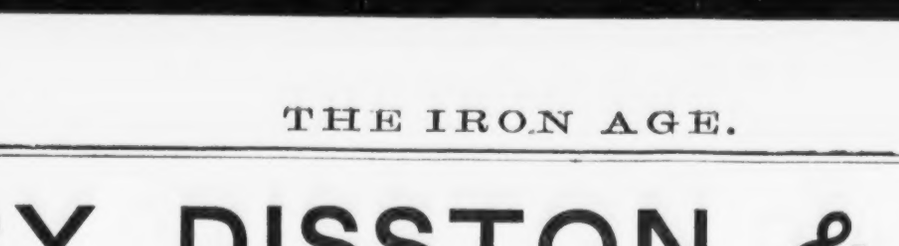
Keystone Saw, Tool, Steel and File Works,

Front and Laurel Streets, Philadelphia.

Branch Works, Tacony, Philadelphia. **Branch House, Randolph & Market Streets, Chicago, Ill.**



HENRY DISSTON & SONS'
Patent Skew-back Hand-Saw
NEW No. 7.



Even in price and quality with our celebrated No. 7 Saw. Warranted to give satisfaction every time.

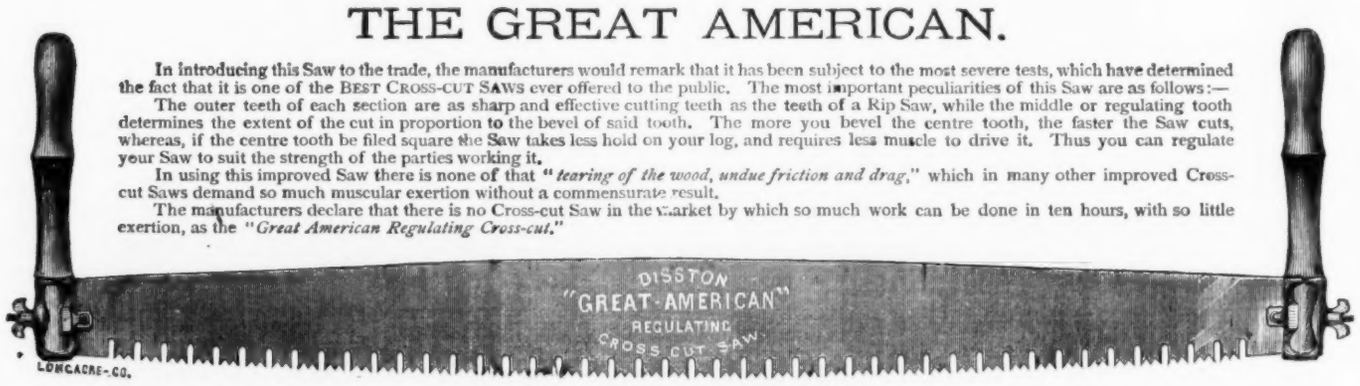
THE GREAT AMERICAN.

In introducing this Saw to the trade, the manufacturers would remark that it has been subject to the most severe tests, which have determined the fact that it is one of the BEST CROSS-CUT SAWS ever offered to the public. The most important peculiarities of this Saw are as follows:—

The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regulating tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the centre tooth, the faster the Saw cuts, whereas, if the centre tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it.

In using this improved Saw there is none of that "*tearing of the wood, undue friction and drag*," which in many other improved Cross-cut Saws demand so much muscular exertion without a commensurate result.

The manufacturers declare that there is no Cross-cut Saw in the market by which so much work can be done in ten hours, with so little exertion, as the "*Great American Regulating Cross-cut.*"



THE LUMBERMAN

Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast-cutting Saws of the present day must lose their shape and cannot be kept in order.

In filing this Saw, the round edge mill file should be used, and by pressing a little downward as well as sideways you keep the tooth at all times in the same shape it leaves the factory. Attached to the Lumberman and Climax Saws will be found our new patent Cross-cut handle which is at once the most simple and complete detachable handle now in use. Place the end of the saw blade into the slot in the casting, drop the pin or rivet into its position, and a few turns of the wing nut secures the handle immovably to the Saw. Although the pin is loose when the handle is detached from the Saw, it is by a simple contrivance secured in its place, ready for use,—an advantage which will be fully appreciated by all lumbermen. We guarantee this handle to be superior to any in use.

THE CLIMAX.

The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

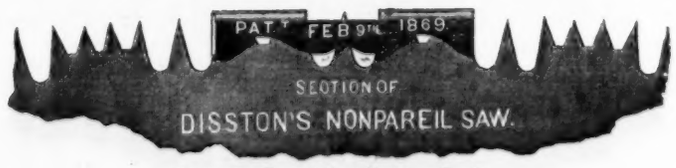
It will be observed that the spaces between the points are exactly alike (a principle which we have endeavored to preserve in the manufacture of all our Saws), because it makes the cut clean and even, leaving ample room for dust. This saw can also be easily kept in perfect order, and the tooth will retain its original shape by the proper use of the file, as directed in the article on the Lumberman. A Gauge for reducing the length of cleaner teeth will accompany each Saw.

THE NONPAREIL.

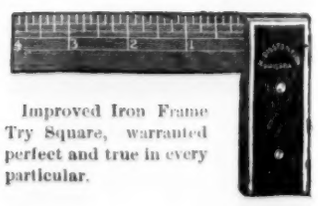
The Nonpareil, of which the accompanying cut is a representation, is composed of sections of four cutting teeth, each section intersected by a cleaner tooth. It will be observed that the cavities on each side of the cleaner teeth are much larger and deeper than those of the cutting teeth, serving as a receptacle or chamber for dust, and effectually freeing the Saw during the operation of cutting. The cleaner teeth should always be kept shorter or lower than the cutting tooth. (The Gauge, as shown below, is made expressly for this purpose, and by its use the cleaner teeth of any Saw can be regulated and kept of exact length.)

This Saw has given unbounded satisfaction wherever it has been used, and we are constantly receiving orders for the same; in fact, in some sections, and for sawing soft lumber, it is preferred to any other Saw.

Improved Pruning Saw and Knife, Patented August 29, 1873.



Gauge for Regulating Cleaning Teeth.



Improved Iron Frame Try Square, warranted perfect and true in every particular.

Our Celebrated CROSS-CUT SAWS.

New York Wholesale Prices, June 9, 1875.

HARDWARE.

Anvils.
Solid Cast Steel... ₩ ℔ 14c
Wright's... ₩ ℔ gold 11c; over 250 ℔s 11½c, gold
Armitage's Mouse Hole... gold 11c
Wilkinson's... ₩ ℔ gold 11c
Eagle Anvils... ₩ ℔ 8c

Apple Parers.
Domestic, Turn Table, Lightning, Hudson's, Reading, Union } $7.75 ₩ doz
Skeleton Paring, Coring and Slicing... $8 00 ₩ doz net
Bay State, Paring, Coring and Slicing... $15 00 dis 10 %
Climax Slicer... 8 00

Augers and Bits.
Douglass, Ives, Beecher (French, Swift & Co), Griswold, Challenge } 1st quality... dis 40&10 %
Nobles Mfg. Co... dis 40 @ 40&5 %
Cook's... dis 40&10&10 %
Snell Mfg. Co... dis 22½ @ 25 %
Jennings' Bits... dis 10 %
Lewis' Single Twist Bits... dis 30 %
Andrews' Bits... dis 25 %
Griswold's Patent Bits... dis 20 %
Expansive Bits, Clark'... small, $18; large, $26—dis 15 %
" " Ives'... $20 @ $30—dis 30 %
" " Blake's... $20—dis 40 %
Hollow Augers, Douglass', Ives', French, Swift & Co. } dis 40 %
" " Bonney's Adjustable. ₩ doz $48—dis 25 %
" " Stearns' " ₩ doz $48—dis 25 %
" " Ives' Expansive... each $4·50—dis 40 %
" " Universal Expansive, each $4·50—dis 10 %
Gimlet Bits—Screw, $7·50; no screw, $9... dis 20&10 %
Double Cut Gimlet Bits, Shepardson's... dis 20 %
" " Hartwell's... dis 50 %
" " Douglass'... dis 20&10 %
" " Ives'... dis 30 %
Morse's Bit Stock Drills... dis 20 %
L'Hommedieu's Ship Augers... dis 15 @ 20 %
Watrous Ship Augers... dis 15 %
Vaughan's Post Hole— 6 in. $23 60; 7, 8 and 9 in. $25 per doz... dis 20 %

Awls and Tools.
Aiken's... dis 25 %
Nos. 42 and 43... dis 35&10 %
Clark's... dis 30&10 %
Stanley's Excelsior... $13 50—dis 20&10 %

Axes.
Brook's... per doz $12 00 @ 14 00 net
Blood's... per doz $15 00 @ 16 50—dis 20 %
Hunt's... ₩ doz $12 50 @ 14 00
Collins'... ₩ doz 11 00 @ 15 50 net @ dis 5 %
B. Clark's (J. C. W. & Co.) Bronzed... ₩ doz $10 00 net
Hurd's... ₩ doz 10 50 @ 12 50
Simmons'... ₩ doz 11 00 @ 11 50
Morris'... ₩ doz 12 50 @ 13 50
Red Jacket... ₩ doz 12 00 @ 12 50
Mann's... ₩ doz 11 50 @ 13 00
Double Bitted... ₩ doz 21 50 @ 22 00
Underhill's... ₩ doz 12 00 @ 13 00
" Crown... ₩ doz 12 50 @ 13 50
John Leverett's... ₩ doz 12 50 @ 15 50
Ten Eyck... ₩ doz $10 50 @ 12 50 net
M. H. Jones & Co... ₩ doz 10 50 @ 12 50 net
Nobles Mfg. Co... per doz $10 50, net

Balances... dis 35 %

Bands.
Plated... new list dis 50&5 %
Iron Rim... new list dis 25&5 %
Brass (Plated list)... new list dis 50, 10&5 %
Oroide... new list dis 50&5 %

Bells.
Hand, Light Brass... dis 70&5 @ 70&10 %
" Extra Heavy... dis 40&10 %
" White Metal... dis 50&10 %
" Silver Chime... dis 15&10 %
" Swiss... dis 25 %
" Globe (Cone's Patent)... dis 15&10 %
Gong Abbe's... dis 15&10 %
" Yankee... dis 30&10 %
" Barton's... dis 33⅓ %
Crank, Taylor's... dis 25 %
" Brook's... dis 50 %
" Cone's... dis 10 %
" Connel's... dis 50&10 %
Lever, Sargent's... dis 60&10&10 %
" Taylor's... dis 25 %
" Hart, Bliven & Mead Mfg. Co... dis 50&10 %
Pull, " " " "... dis 50&10 %
" Brook's... dis 50 %
" Western... dis 25 %
Cow—Common Wrought... dis 20&10 %
" Western... dis 20&10 %
" Sargent's... dis 50&10&10 %
" Kentucky "Star"... dis 20&10 %
" Sargent's... dis 50&10&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog.
$12·00 10·00 9·00 8·00 6·00 5·00 3·50 2·50 5·00—dis 45 %
" Yaw's Genuine... dis 30 %
" Texas... dis 35 %
Call... dis 15 %

Bellows.
Blacksmiths'... dis 20 %
Moulders'... dis 15 %
Hand Bellows... dis 10 %

Blind Adjusters.—Domestic... ₩ doz $3—dis 20 %

Blind Fasteners.
Mackrell's... dis 30 %
Van Sand's, No. 2000, $14·00; No. 3705, $10·50... net
Washburn's Patent... ₩ gross $14 00 net
Merriman's... new list net

Blind Staples.
Boardman's Patent, ⅜ in. and larger... ₩ ℔ 37 c
" " ⅝ in... 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list... dis 30 %
Burr's... dis 10 %
Stanley Rule and Level Co... dis 25&10 %

Bolts.
Cast Iron Barrel, Shutter, &c... dis 60&10 %
Cast Iron Chain... dis 60&10&10 %
Wrought Iron Barrel... dis 50, 10&10 %
" " Square... dis 50, 10&10 %
" " Shutter... dis 60&10 %
Wrought Iron Flush, Stanley's... dis 15&10 %
" " " Sargent's... dis 50&10&10 %
Carriage and Tire, Common... dis 75 %
" " " Norway Iron... dis 50&10 %
" " " R. B. & W... (old list) dis 60&5 %
" " " Philadelphia, Star... dis 55 %
" " " " Eagle... dis 55 %
Union Nut Company, old list... dis 60&10 %
Stove... dis 25 %
" R. B. & W... dis 25 %

Borax.... 15c. ₩ ℔

Boring Machines.
Kellogg's... dis 15 %
Snell Mfg. Co., Rice's Patent... dis 20 %
" " Regular... dis 20 %
Douglas Mfg. Co... No. 5, $3·25; with Augers, $5·00 net
No. 2, 4·00 " " 6 00 net
Pair's... dis 30&10 %
Phillips' Angular, complete with Augers... each $7 25
Mortising Machines, $20·00 each... dis 20 %

Bow Pins.
Union Nut Co... new list dis 50&10&5 %
Hotchkiss'... dis 50 @ 55 %
Humason, Beckley & Co.'s... dis 50&10&5 %
Sargent & Co.'s... dis 50&10&10 %

Braces.
Barber's Patent... dis 40&5 %
Q. S. Backus... dis 40&10 %
Wilson Mfg. Co... dis 10 %
Spofford's Patent... dis 50 %
Noble's Patent... dis 40&5 %
Ives Novelty... dis 40&7½&10 %
" Hamden... dis 15&10 %
Common Ball... dis 15&10 %

Brackets.—Shelf... dis 60&10 @ 65&10 %
Bright Wire Goods... dis 65&10&10 %
Bull Rings.—Union Nut Co., new list, dis 50&10&5 %
Sargent's... dis 60&10 %
Hotchkiss'... 2½ in., $2·25 net

Bung Hole Borers.
Common and Ring... dis 20&10 %
Ives' Tap Borers... dis 10&10 @ 25 %
Enterprise Mfg. Co... dis 20 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co... dis 20&10 %
Bradley's... dis 25 %
Beatty's... dis 20 %
2 3 4 5 6 7 8 9
$19·00 $21·50 $24·00 $27·00 $30·00 $33·50 $36·50 $40·00
Hart Mfg. Co... dis 45&10 %
0 1 2 3 4 5 6
$25·25 $29·75 $34·25 $38·75 $43·25 $48·50 $54·00

Butts.
Wrought Brass... dis 30 %
Cast Brass... dis 20 %
Common Cast, not Drilled.
Fast Joint, Narrow... new list, dis 30&10 %
" Broad... dis 40&10 %
" " Jap'd... dis 35&10 %
Loose Joint, Narrow and Broad... dis 50&10 %
" " " Jap'd... dis 45&10 %
Parliament Butts and Mayer's Hinges... dis 40&10 %
Loose Pin, all kinds... dis 45&10 %
Drilled and Wired.
Fast Joint, Narrow... new list, dis 25&10 %
" Broad... dis 35&10 %
" " Jap'd... dis 30&10 %
" " " with Acorns... dis 30&10 %
Loose Joint... dis 45&10 %
" Jap'd... dis 25&10 %
" " with Acorns... dis 40&10 %
Parliament and Mayer's Hinges... dis 35&10 %
Loose Pin, all kinds... dis 40&10 %
Wrought Iron.
Fast Joint, Narrow, Lt. and Regular... dis 30 %
" Broad... dis 35 %
Loose Joint, Narrow and Broad... dis 35 %
Table Butts, Back Flaps, &c... dis 30 %
Inside Blind, Regular... dis 30 %
" " Light... dis 40 %
Loose Pin, Wrt... dis 35 %
Blind Butts, Parker... dis 60 @ 60&10 %
" Palmer... dis 40 %
" Seymour... dis 55&10 %
" Shepard... dis 60 @ 60&10 %
" Lull & Porter... dis 60 %
" Nicholson... dis 45&10 %
" Ruffer... dis 33⅓&10 %
Blind Butts, Garretson, No. 1... dis 60 @ 60&10 %
Blind Butts, Clark's, Nos. 1, 3 and 5... dis 60 @ 60&10 %
Blind Butts, Clark's No. 2... dis 60&10 @ 65&10 %
" " Nos. 2, 4, 4½, 6, 8, 10... dis 40 %
Am. Spiral Spring Butt Co.. list May 1st... dis 20 %
Union Spring... dis 20 %

Caps—Percussion, per 1000.
G. D... 37 @ 40c
Ely's E. B... 1-4s, 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's... 1-10s 80c gold

Carpet Sweepers.
Union... each $2 75 net
Welcome... each 2 75 net
Cartridges.—Metallic... dis 50&10 %
Cards.—Horse and Curry... dis 30&10 %
Cotton... dis 10&10 %
Wool... dis 15&10 %

Carpet Stretchers.
P. S. & W... per doz $2 00; dis 40&5 %
Sargent's... per doz $2·88—dis 50&10&10 %

Casters.
Bed... dis 30&10 @ 40 %
Plate and Shallow Socket... dis 40&10 %
Deep Socket... dis 33⅓ %
Cattle Leaders... new list dis 60&10 %

Chain
English Coil... net gold
₩ ℔... 12 9 8½ 8 7¾ 7½c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2... by the cask, ₩ pair, gold 55c
Trace, 7-10-2... by the cask, ₩ pair gold, 62c
German Halter Chain... dis 20 % gold
German Coil... dis 20 % gold
Galvanized Pump Chain... ₩ ℔ 13c
Jack Chain, Iron... dis 50&10 %
" Brass... dis 40&10 %

Chalk.
White... ₩ gross, 57c net
Red... ₩ gross, 90c net
Blue... ₩ gross, $1·00 net
White Crayons... ₩ gross, 16½c net

Chisels.
Socket Framing, Douglass, Extra... dis 60&10&10 %
" " Crossman... dis 50&15&10 %
" " Buck Bros... equivalent to dis 50&15 %
" " Hart Mfg. Co... dis 60&10 %
" " Merrill... dis 60&10 %
" Firmers, Douglass, Extra... dis 60&10 %
" " Crossman... dis 50&10&10 %
" " Buck Bros... equivalent to dis 50&15 %
" " Hart Mfg. Co... dis 60&5 %
" " Merrill... dis 60 %
Socket Corner... dis 60&10 %
Tanged Firmers... dis 40&10 @ 50 %
Butcher's... $5·50 to £ gold
Newbould's... $5·50 to £ gold
Spear & Jackson's... $5·50 to £ gold
Buck Bros (Shank)... $5·50 to £ gold

Clamps.
Cabinet... dis 60&10 %
Gray's... dis 20 %
Lambert's... dis 20 %
Providence Tool Co... dis 10 %

Clips, Axle.
Norway or Best... dis 40 %
Superior... dis 50 %
"Star," Superior Philadelphia... dis 45&5 %

Coal Shovels.
Edgar's Pat. "Gem," Short and Long H'dled... dis 15 %
Iron Handled... ₩ doz, $ 85 @ 1 25
Wooden Handled... ₩ doz, 1 00 @ 2 00
Coal Hods.—Smith, Burns & Co... dis 15 @ 25 %
14 15 16 17 18 inch.
Japanned... $6·00 6·35 6·75 7·50 8·00 per doz.
Galvanized... 9·50 10·00 10·75 11·50 12·50 "
Morning Glory Funnel Hods—
No. 15 16 17
Japanned... $9·00 10·50 12·00 per doz
Galvanized... 13·00 14·50 16·00 "
Sidney Shepard & Co.'s new list... dis 10 %
Cockeyes... 1¼ in., 28c.; 1½ in., 33c.; 1¾ in., 37c. net

Cocks.
Brass Racking... dis 33⅓ %
Lock and Globe... dis 33⅓ %
Lever Bibbs... dis 33⅓ %
Ale and Beer... dis 20&10 @ 25&10 %

Coffee Mills.
Board and Box... dis 15 @ 20 %
Increase Wilson's... dis 20 %
Selsor's Pat... $9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.)... dis 20 %
French Steel... dis 15 %
The Swift... dis 35 %

Compasses and Dividers.
Bemis & Call Co.'s... dis 35&10 %
Cook's... dis 15 %
Excelsior... dis 30 %
Peck Stow & Wilcox... dis 25 %
Miller's Patent... dis 25 %

Coopers' Tools.
Bradley's... dis 15 @ 20 %
Chas. E. Little... dis 20 @ 25 %
Swan & Brombacher... dis 15 @ 20 %
Corkscrews... dis 25 %

Corn Knives and Cutters.
Bradley's... dis 10 %

Crow Bars.
Cast Steel... ₩ ℔ 11c. net
Iron, steel points... ₩ ℔ 6c
Crucibles.—Gautier & Co... ₩ No. 5½c

Curling Irons, &c.
⅜, ½, ⅝ in., $1·80, $2·00, $2·40... dis 10 %
Curling Tongs... ₩ doz $6 50—dis 15 %
Pinching Irons... ₩ doz 7 50—dis 20 %

Curry Combs.
Hotchkiss' & Kellogg's, Iron & Brass, old list. dis 30&10 %
Fitch's (List of No. 200, $1)... dis 20&10 %
Rubber... ₩ doz, $9·00—dis 15 %
Curtain Pins.—Silvered Glass... old list dis 52½ %

Cutlery.
American Table { Meriden } New list Jan. '75, dis 25 %
American Pocket { Cutlery Co } ... dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co... dis 20&10 %

Dippers.
Britannia... per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain... per doz $3·25—dis 20 %
" Rimmed... per doz 3·75—dis 20 %

Dog Collars.
Embossed Gilt... dis 20 %
Leather... dis 20 %
Brass... dis 25 %

Door Springs.
Gray's... $7·50 ₩ doz—dis 50&10 %
Torrey's Patent... $7·50 ₩ doz—dis 55 @ 55&10 %
Johnson's... per doz $3 00 @ 4 00
Palmer's Japanned No. 6... ₩ doz $5·00; " Coppered " 6·00; " Silvered " 8·00 } dis 20 %
Challenge.—
Japanned... No. 9, per doz $4·00; No. 7, " 5·00; No. 6, " 6·00 } dis 40 %
Gem.—No. 1 large, Japanned... per doz $4·00; No. 2 medium... per doz 3·50; No. 3 small... per doz 3·00 } dis 10 %
Barker's Concealed... dis 12½ %

Drawing Knives.
Crossman's No. 1... dis 50&15&10 %
Douglass, Extra... dis 60&10&10 %
Hart Mfg. Co., No. 1... dis 60 %
Merrill... dis 60&10 %
Nobles Mfg. Co... dis 15 %
Bradley's... dis 25 %
Adjustable Handle... dis 15 %

Drills and Drill Stocks.
Blacksmiths'... each $2 60 net
" Self-Feeding... each $8 00 net
Breast, P. S. & W... dis 25 %
" Miller's Falls... dis 25 %
" Aiken's... dis 40 %
" Hotchkiss'... dis 10 %
" Wilson's... dis 10 %
Ratchet, Merrill's... dis 20 %
" Ingersoll's... dis 25 %
" Whitney's... dis 20 %
" Weston's... dis 20 %
" Moore's Triple Action... dis 20 @ 25 %
Wilson's Drill Stocks... dis 10 %
Automatic Boring Tools... each $2·60—dis 15 %
Drill Chucks.—The Danbury.. each 10·00, dis 20 @ 25 %
Beach Patent (Morse)... dis 15 %

Egg Beaters.
Monroe's... 8 in. 10 in.
Per doz $8·00 9·00... dis 10 %
Dover... ₩ doz $6·00—dis 10 %
National... ₩ doz $4·50—dis 20 %
Peerless... ₩ doz $4·00—dis 10 %

Emery.
Genuine Chester—Regular Nos... ₩ ℔ 6c; " Flour and FF... ₩ ℔ 4c } dis 10 %
Washington Mills—Regular Nos... ₩ ℔ 8c
" Flour... ₩ ℔ 5c

Enameled and Tinned Ware.
Kettles... dis 30 @ 40 %
Sauce Pans... dis 25 %
Glue Kettles... dis 20 @ 25 %
Tinned Saucepans... dis 25 %

Escutcheons.
Door Lock... Same discounts as Door Locks
Brass Thread... dis 60&10 %
Wood... dis 25 %

Faucets.
Fenn's... dis 50 %
" Cork Stops... dis 40 %
Star... dis 55&10 %
Frary's Patent Petroleum... dis 15&10 %
Taylor's Pattern "... dis 20&10 %
Wood and Metallic... dis 40 %
Wood, Cork Lined... dis 60&10 %
Enterprise Mfg. Co., Self-Measuring... dis 20 %
Felloe Plates... ₩ ℔ 15c; dis 25 %

Files.
American File Co... $5 00 to £ currency—dis 15 @ 20 %
Nicholson... new list, Jan. 1, 1875, net
Hartford File Co... $5 50 to £ currency—dis 10 %
L. B. Heller & Co... $5 00 to £ currency
Heller & Bros... $5 00 to £ currency
"Western"... 5 00 to £ net
Rothery's... $5 to £ currency
Black Diamond... $5 to £ currency, dis 10 %
J. & Riley Carr... 5 25 to £ gold
" Horse Rasps... 5 50 to £ gold
Stubs'... $8 50 @ 9 00 to £ gold
Butcher's... 5 25 to £ gold
Walter Spencer & Co.'s "Diamond"... 5 25 to £ gold
Spear & Jackson's... 5 00 to £ gold
Jowitt's... 5 00 to £ gold
Newbould's... 5 25 to £ gold
W. K. & C. Peace's "Imperial"... 5 25 to £ gold
R. Ibbotson... 5 00 to £ gold
Turton Bros. & Matthews... $5 50 to £ currency
Ashworth's (Van Wart & McCoy). $5 00 to £ cur. dis 10 %
Fisher's... 4 75 to £ gold
Goodlad's... 4 00 to £ gold
Moss & Gamble... 5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" " Horse Rasps... 5 25 to £ gold
"Philo Sheffield," P. T. Co... 5 00 to £ gold
Limet & Co. (French)... 5 00 to £ gold

Fluting Machines.
Mrs. Coles' Pony.. 4 in., $4·75; 5 in., $5; 6 in., 5·50; 7 in., $6
Knox, with 4-inch Rolls... 4 15 each net
" " 6 "... 4 50 each net
" " 8 "... 6 75 each net
O. K... 6 50 each net
Peerless, 4-inch Rolls... 4 00 each net
" 5 "... 4 75 each net
Excelsior, No. 1... 4 75 each net
" No. 2... 6 50 each net
Diamond... 7 50 each net
Champion, 6 inch rolls... $6 00 each net
" 4 inch rolls... $5 00 each net
Climax 7-inch Rolls... 8 00 each net
" 4½ "... 6 50 each net
Empire... 4 00 each net
Eureka, No. 1, 7-inch Roll... 8 00 each net
" No. 2, 5-inch Roll... 6 00 each net
K. F. M., 4½-inch Roll... 5 50 each dis 15 %
" 6-inch Roll... 6 00 each dis 15 %
Myers' Fashion Fluter, 4½-inch Rolls... 2 75 each net
" Convex Brass Fluter, Sad Iron attachment.. $1·75
Domestic Fluter... $1·50 each net
Fairy, Self-Heater... 00 each net
Geneva Hand Fluter... $15 00 per doz net
Fluting Scissors... dis 25&10 %

Forges.
Empire" (W. P. Kellogg & Co.)... dis 20 %

Forks.
Hay, Manure & Spading... dis 33⅓ %
Plated A 1... dis 50 %

Fry Pans.
Burnished, P. S. & W., new list... dis 45 %
₩ doz... $3·00 3·75 4·25 4·75 5·25 6·00 7·00 8·00 9·00
No... 0 1 2 3 4 5 6 7 8
Smith, Burns & Co., "Excelsior" Polished... dis 35 %
₩ doz... $3·70 4·00 4·70 5·30 6·00 7·00 8·00 9·00
No... 1 2 3 5 6 7 8

Gas Stoves.
Tifft & Howard... dis 20 %

Gauges.
Marking... dis 45&10 %
Wire... dis 10 %
" Smith's Patent... per doz $18·00, dis 40 %

Gimlets.
Nail and Spike... dis 25&10 %
Double Cut, Shepardson's... dis 20 %
" " Ives'... dis 25 %
" " Douglass'... dis 20&10 %

Grind Stone Fixtures
Sargent's Patent... dis 65&10 %
Reading Hardware Co... dis 70&10 %
J. F. Green & Bro... dis 20 %
Hart Mfg. Co.'s... dis 60&5&10 %

Hammers.
Emmet Hammer Co.'s Handled... dis 25 %
" " Sledge & Stone.. ₩ ℔ 25 @ 30c net
Humason & Beckley Mfg. Co... dis 16⅔&10 %
Maydole's, new list... dis 5 @ 7 %
Cheney's... net
Verree... dis 5 %
Yerks & Plumb... dis 12½ %
Magnetic Tack... dis 25&10 %
Warner's... dis 10 %

Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair; " Leg Irons $6 50 per pair } dis 25 %
Providence Tool Co.'s Hand Cuffs $15 per doz; " " Leg Irons 25 " } dis 10 %

Handles.
Door or Thumb Latches—
Nos. 0 1 2 3 4
Per doz $0·80 1·00 1·18 1·35 1·50—dis 60 %
Roggin's Latches... 40c. @ 50c. net
Bronzed Iron Drop Latches... per doz $1·50 net
Wrought Chest... dis 60&10 %
Surface Chest... dis 65&10&10 %
Flush Chest... dis 60&10&10 %
Lifting... dis 60&10 %
Coffin... dis 50&10 @ 60&10 %
Saw and Plane... dis 20&10 %
Hammer and Hatchet... dis 10 %
Brad Awl... per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 20&10 %
" " large " 6 50—dis 20&10 %
Apple " " ass'td " 6 00—dis 20&10 %
" " " large " 7 50—dis 20&10 %
Socket " " ass'td " 8 50—dis 20&10 %
" Framing " " 7 00—dis 20&10 %
File " " 4 00—dis 20&10 %
Auger " " 6 50—dis 20&10 %
" large " 8 00—dis 20&10 %
Patent Auger, Ives'... dis 25&10 %
" " Douglass'... per set $1 25—dis 10 %
" " Swan's... per set $1 00—dis 10&10 %

Hangers.
Barn Door... dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.)... dis 30&5 %
Novelty... dis 30 %

Harness Snaps.
Henshaw's... dis 25&10 %
Judd's... dis 40 %
Fitch's (Bristol)... dis 30 %
Hotchkiss'... dis 10 %
Andrews'... dis 25 %
Sargent's... dis 50&10 %
New York Wire... dis 20&20 %

Hatchets.—Isaiah Blood... dis 15 %
Shingling, Nos. 1 2 3... ₩ doz $7 25 8 00 8 75
Claw, " 1 2 3... ₩ doz 7 75 8 50 9 25
Lathing, " 1 2 3... ₩ doz 7 50 8 00 8 50
Hunt's... dis 10 %
Shingling, Nos. 1 2 3... ₩ doz $7 25 8 00 8 75
Claw, " 1 2 3... ₩ doz 7 75 8 50 9 25
Lathing, " 1 2 3... ₩ doz 7 50 8 25 9 00
Hurd's... dis 25 %
Shingling, Nos. 1 2 3... ₩ doz $8 00 8 50 9 00
Claw, " 1 2 3... ₩ doz 9 00 9 50 10 00
Lathing, " 1 2 3... ₩ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s... dis 25 %
Shingling, Nos. 1 2 3... ₩ doz $6 50 7 00 7 50
Claw, " 1 2 3... ₩ doz 7 25 7 75 8 25
Lathing, " 1 2 3... ₩ doz 6 50 7 00 7 50
Yerkes & Plumb... dis 12½ %
Shingling, Nos. 1 2 3... ₩ doz $7 00 7 50 8 00
Claw, " 1 2 3... ₩ doz 7 50 8 00 8 50
Lathing, " 1 2 3... ₩ doz 7 00 7 50 8 00
Simmon's... dis 15 %
Shingling, Nos. 0 1 2 3... ₩ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3... ₩ doz 9 00 9 50 10 00
Lathing, " 1 2 3... ₩ doz 8 00 8 50 9 00
Broad, " 1 2 3... ₩ doz 9 00 10 00 12 00
" " 4 5 6... ₩ doz 14 00 16 00 18 00
" " 7 8... ₩ doz 20 00 22 00
Elephant... dis 25 %
Shingling, Nos. 1 2 3... ₩ doz $8 00 8 50 9 00
Claw, " 1 2 3... ₩ doz 9 00 9 50 10 00
Lathing, " 1 2 3... ₩ doz 8 00 8 50 9 00
J. P. Verree & Co... dis 5 %
Shingling, Nos. 1 2 3... ₩ doz $7 00 7 50 8 00
Claw, " 1 2 3... ₩ doz 7 50 8 00 8 50
Lathing, " 1 2 3... ₩ doz 7 00 7 50 8 00
Underhill's... dis 10 %
Shingling, Nos. 1 2 3... ₩ doz 7 25 8 00 8 75
Claw, " 1 2 3... ₩ doz 7 75 8 50 9 25
Lathing, " 1 2 3... ₩ doz 12 00 11 00 13 00
M. H. Jones & Co... dis 25 %
Shingling, Nos. 1 2 3... ₩ doz $8 00 8 50 9 00
Claw, " 1 2 3... ₩ doz 9 00 9 50 10 00
Lathing, " 1 2 4... ₩ doz 8 00 8 50 9 00

Hinges.
Gate, Western... ₩ doz $6·25—dis 60&10 %
" N. E... ₩ doz 11·25—dis 60&10&10 %
" N. Y. State... ₩ doz 7·20—dis 60&10 %
Rolled Plate... dis 65&10 %
" Raised... dis 65&10 %
Wrought Strap and T... dis 33⅓&10 %
Providence Plate. { 6 and 8 in. 11c ₩ ℔; over 8 in. 9½c ₩ ℔ } ... dis 30 %
Screw Hook and Strap. { 8, 10, 12 in. 7c; 14 to 36 in. 6c } ... net
Heavy Welded Hook... { 8 to 12 in., 6½c; 14 in. & up, 6c } ... net
Screw Hook and Eye... { ⅜ to 1 in., 8½; ⅝ in. 9½; ½ in. 11½ } ... net

Hoes.
Solid Shank, C. S... ₩ doz $8 00—dis 35 %
Socket... ₩ doz 9 00—dis 35 %
Riveted Eye... ₩ doz 5 00—dis 35 %
Grub... dis 25 %
Planters... net @ dis 5 %
Scovill... add 33⅓ %
Scovill Pattern... net @ dis 5 %
Lane's C. S. Cresent, American Pattern... list net
" " Scovil Pattern... add 10 %

Hooks.
Bird Cage... dis 60&10 @ 70&10 %
Cotton... dis 50 %
Belt... dis 55 @ 60 %
Bench—Skinner's... per doz $8 00, dis 30&10 %
Bench—Hotchkiss' $5 00 ₩ doz... dis 10 %
Bench—Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" —McGill's... $3 00 per doz, dis 10 %
Clothes Line, Harness, Wardrobe, Hat and Coat, Ceiling, } Hart's list... dis 60&10&10 %; Sargent's list... dis 60&5&10 %; Reading list... dis 25&10 %
Wrought Staples and Hooks and Staples... dis 70&10 %
Wire Screw Hooks and Eyes... dis 65&10&10 %
Grass... dis 20 %
Whiffletree—Patent... dis 30 %
Hooks and Eyes—Malleable Iron... dis 60&10&10 %
" " Brass... dis 60&10&10 %

Horse Nails.

Nos.		5	6	7	8	9	10
American Pressed	₩ ℔	22c	20c	20c	20c	20c	20c
Ausable	"	30c	27c	25c	24c	23c	22c
" P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
" " & Blued	"	32c	29c	27c	26c	25c	24c
Brundage	"	29c	26c	24c	23c	22c	21c
Buffalo Forged	"	31c	28c	26c	25c	24c	23c
Globe, P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin	"	28c	25c	23c	22c	21c	20c
National, Pointed and Polished, Ex. Fin	"	30c	27c	25c	24c	23c	22c
New London U. B.	"		29c	27c	26c	25c	24c
" " Great Western	"		27c	25c	24c	23c	22c
Perkins' Finished	"	30c	27c	25c	24c	23c	21c
Putnam	"	32c	29c	26c	25c	24c	23c
Vulcan, P't'd & Blued	"	33c	30c	28c	27c	26c	25c

Star brand, 16c.; Morgan... 14c
Putnam... 2000 lbs., dis 5 %
Ausable, Am. Pressed, Perkins, Globe, National and New London... 1000 lbs., dis 5 %
Vulcan... 1000 lbs., dis 7½ %
Vulcan and Brundage... 500 lbs., dis 5 %

Horse Shoes.
Burden... ₩ keg, $5 62½
R. I. Horse Shoe Co., Perkins Pattern... ₩ keg, 5 62½
" " R. I. Pattern... ₩ keg, 6 62½
Mule Shoes... ₩ keg, 6 62½

Kettles.
Brass... ₩ ℔ 45c net
Enameled... dis 30 @ 40 %

Knives.
Ames' Butcher Knives... dis 20 %
" Shoe "... dis 15 %
" Bread "... ₩ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's"... dis 20 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives... dis 25 %

Knobs.
Carriage (Jap'd 80 cents per gross)... dis 60&10 %
Base—Common... net
" Plush Tip... dis 10 %
" Elastic End, No. 8... dis 30&10 %
Door, Mineral... ₩ doz $2·25; " Por. Jap'd... ₩ doz 3·00; " " Plated... ₩ doz 7·00; " " Por... ₩ doz 7·50 } dis 45&5&2 %
Furniture, Plain... 75c gross inch, dis 10 %

Ladles.
Melting, Hart's... dis 55&10 %
" Sargent's... dis 50&10 %
" Reading... dis 15&10 %

Lanterns.
Tubular... No. 0, $11·00; No. 1, $14·00 net
Peerless... No. 5, per doz $11·75—dis 10&10 %
Brady's Patent... dis 10 & 10 %
Ætna... dis 10 & 10 %
Yankee... dis 10 & 10 %
De Beque... dis 10 & 10 %

Lard Presses.
Draw Cut, 14 inch... each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined... per doz $7 00, dis 15 %
Eureka, Tinned... per doz, $10·00 dis 10 %

Lines.
Linen Fish... dis 20 %
Cotton Chalk... dis 40 @ 45 %
Sil. Lake Chalk... Nos. 0, 1, 2, 3, $6, 6·50, 7, 7·50, dis 20 %
Mason's... dis 20 %
Galvanized Wire Clothes... per doz $9·00—dis 10 %

Locks and Latches.
Cabinet—Gaylord... dis 25 %
" Eagle... dis 25 %
Trunk "... new list dis 25 %
Langstroth & Crane, Round Key... dis 40 %
" " Flat Key... dis 33⅓ %
Barnes & Deitz... dis 25 %
Continental... dis 15 %
Shepardson's... dis 20 %
American Lock Co... dis 33⅓ %
Plate... dis 25 %
Yale Lock Co... dis 40 %
Sargent & Greenleaf... dis 20 %
Trenton, Branford, Norwich, Russell & Erwin, Norwalk, Nashua, Mallory, Wheeler & Co., P. & F. Corbin, Parker & Whipple, Jacobus & Slinick Mfg. Co. } Rev'd list of Jan. '75 dis 45&5 %. 2 % extra for cash.
Padlocks, Russell & Erwin; " Mallory, Wheeler & Co; " Wm. Wilcox & Co } List of Jan., '75. dis 45&5&2 %
" Romer's... dis 15 %
" Vulcan Hardware Co... dis 20 %
" New York Lock Co... dis 20 %
" J. H. McWilliams... dis 5 %
" Scandinavian Jail... dis 10 %
" Barnes & Deitz... dis 25 %
" D. K. Miller Lock Co... dis 30 %
" Penn Lock Works... dis 20 %

Mallets.
Hickory and Lignumvitæ... dis 20 %

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 2 3 4
₩ doz. $14 00 $17 00 $19 00 $30 00 dis 10 %
Miles Challenge... Nos 1 2 3
₩ doz. $22·00 $30·00 $40 00—dis 20 %
Perry's (P. S. & W.)... Nos. 200 300 400
₩ doz. $22·00 $27·00 $40·00—dis 10 %
Woodruff's (P. S. & W.)... Nos. 100 150
₩ doz. $15·00 $15·00—dis 10 %
Hales'... Nos. 11 12 13
₩ doz. $27·00 $33·00 $42·00—dis 25 %
Draw Cut... Nos. 5 6 7
Each $56·00 $90·00 $250 00—dis 20 %
American... dis 25 @ 25&5 %
No... 1 2 2½ 3 4 B 5
Each... $6·00 $9·00 $12·00 $15·00 $30·00 $60·00 $75·00

Molasses Gates.
Stebbins'... dis 65&10 %
" Tinned ends... dis 40&10 %
Bush's... dis 20 %
Lincoln's... dis 50 %
Weed's... dis 15 %

Mortars and Pestles.
Iron... net

Nail Pullers.
Taft's... per doz $24·00 net
Nails.... See Trade Report

Nuts and Washers.
Nuts... large, 6c; small, 8c off list.
Washers... large, 8c; small, 10c off list.

Oilers.
Miller's Zinc, Brass and Copper... dis 40 %
Sheet Metal Screw, Zinc... dis 37½ %
" " " Brass... dis 33⅓ %
Olmsted's... dis 25&10 %
Broughton's... dis 25&10 %
Malleable... per doz $5 00 dis 10 %
Prior's Patent or "Paragon"... dis 30&10 %

Ox Shoes.
Concave... ₩ ℔ 13c net
Ox Balls... dis 60&10 %

Pencils
Faber's Carpenters'... net
" Round Gilt... ₩ gross $6 00 net
Dixon's Lead... ₩ gross $4·50 net
" Lumber... ₩ gross 9·00 net

Picture Nails and Knobs.
Brass Head... dis 60&10 %
Porcelain Head... dis 55&10 %
Richards' Patent... dis 40 @ 40&10 %
Judd's... dis 60&10 %
Pinking Irons... per doz $2 75—dis 65 %

Planes.
First Quality... dis 35 %
Second Quality... dis 50 %
Bailey's Patent Adjustable... dis 20&10 %
Plane Irons, Butcher's... $5 50 to £ gold—new list
" Buck Bros... $5 50 to £ gold
" Auburn Tool Co.'s... dis 25 %
" Greenfield Tool Co... net list
" Middletown Tool Co... net list
" Ohio Tool Co... dis 10 %
" Spear & Jackson's... 5 50 to £ gold—new list
" Sandusky Tool Co... dis 10 %
Plow Bits, Greenfield Tool Co... dis 10 %

Pliers and Nippers.
Button's Patent... dis 33⅓ %
Hull's Patent Nippers... dis 25 %
Leach's Patent Wire Cutters... per doz $6 50—dis 15 %

Plumbs and Levels.
Chapin's... dis 66⅔&10 %
Standard Rule Co.'s New Adjustable... dis 60&10 %
Standard Rule Co.'s Non-Adjustable... dis 60&10&10 %
Stanley R. & L. Co.'s Pat. Adjustable... dis 60&10 %
" " " Non-Adjustable... dis 65&10 %
Pocket Levels... dis 50&10 %
Johnson's Patent Adjustable... dis 60&10 %

Pulleys.
Hot House and Tackle... dis 60&10 %
Jap'd Screw... dis 60&10 %
Brass Screw... dis 60&10 %
Jap'd Side... dis 60&10 %
" Clothes Line... dis 60&10 %
Hay Fork... per doz $4 50 @ 5 00, dis 10 %

Pumps.
Douglas Cistern, etc... new list dis 25 %
" S. & F... new list dis 20 %
Union Mfg. Co's. Cistern and Pitcher... dis 25 %
" " " Rams... dis 20 %
" " " Garden Engines... dis 10 %
Cucumber (B[illegible]ingham & Purdy)—
6 ft. No. 3, with 12 ft. pipe... $4·00 net
6 ft. No. 1, with 12 ft. pipe... 4·50 net
From 6 to 36 ft. add 20 cents per ft.
Pipe, 8c. per ft.; Coupling, 20c. per ft.

Punches.
Belt or Drive... per doz $1·50 net
Spring... per doz $7·00—dis 20&10 %

Rail.
Sliding Door, Wrought Brass... ₩ ℔ 44c., dis 10 %
" " Iron, Painted... ₩ foot 9c—dis 55&10 %
Barn Door, ½, ⅝ and ¾ inch... dis 60&10&10 %
" " for N. E. Hangers... dis 60&10&10 %

Rakes.
Cast Steel... dis 35 %
$8 00 9 00 10 00 11 00
8 10 12 14 teeth.
Malleable... dis 35 %
$5 00 5 50 6 00 6 50
9 11 13 15 teeth.

Razor Straps.
Evan's... dis 25&10 %
Genuine Emerson (B. F. Badger or C. Emerson)... dis 25 %
Imitation Emerson... ₩ doz $2·75—dis 40 %
Hunt's... dis 40 %
Chapman... dis 10 @ 15 %
Torrey's... dis 10&10 %
Saunder's... net @ 10 %

Rivets.—Old Colony.
Iron and Tinned... dis 25&7½ %
In bulk... dis 7½ %
Copper Rivets and Burrs... dis 20 %
Nos. 7 8 9 10 11 12 13 14 15
Per lb. 49c 50c 52c 54c 56c 58c 60c 65c 70c
Rivet Sets... net

Rods.
Stair... new list dis 30 @ 33⅓ %
" American Patent... dis 33⅓ %

Rollers.
Barn Door... revised list dis 60, 10&10 %
Novelty... dis 10 %

Rope. Manufacturers' List of May 10, 1875.
Manila... ½ inch and larger ₩ ℔ 15 c
"... ⅜ inch ₩ ℔ 15½c
"... ¼ and 5-16 inch ₩ ℔ 16 c
Manila Lath Yarn and Tar'd Rope... ₩ ℔ 14½c
" Hay Rope... ₩ ℔ 15½c
Sisal... ½ inch and larger ₩ ℔ 12 c
"... ⅜ inch ₩ ℔ 12½c
Sisal... ¼ and 5-16 inch ₩ ℔ 13 c
" Hay Rope... ₩ ℔ 12½c

Rules.
Hubbard & Curtiss... dis 60&20 %
Boxwood, Ivory.
Chapin's... dis 66⅔&10 % dis 50&10 %
Stanley... dis 70 % dis 50&10 %
Standard... dis 70 % dis 50&10 %
Stephens'... dis 70 % dis 50 %

Sad Irons.
From 4 to 10 lbs... ₩ ℔ 3¾ @ 4c net
Sad Iron, Nickel Stand attached... ₩ ℔ 9c
Self-Heating... per doz $10 00 net
" Tailors'... per doz 22 50 net

Sand Paper.
Beader & Adamson's (Flint) 00 to 1½. $4 25 ₩ ream; " " 2, 2½ & 3. 4 75 "; " " Assorted... 4 25 "; " " Star... ₩ ream $3 25; " " Emery... ₩ ream $6 50 @ 11 50 } dis 15 %
H. B. & M. Roman Flint... dis 15 %

Sash Cord.
Common... ₩ ℔ 20 @ 22c. net
Silver Lake, Russia Flax... ₩ ℔ 55c; " " White Cotton... ₩ ℔ 55c; " " Drab Cotton... ₩ ℔ 60c } net

Sash Locks.
Clark's, Nos. 1 and 2, $10·00 per gross... dis 33⅓ %
Ferguson's... dis 33⅓ %
Norwich... dis 15 %
Walker's... list net
Sash Weights.—Solid Eyes... ₩ ℔ 2c

Sausage Stuffers or Fillers.
Miles... ₩ doz $20—dis 10 %
Stow or Perry... ₩ doz No. 1, $15; No. 0, $21—dis 15 %
Draw Cut No. 4... each $30 00—dis 20 %
Saw Frames... per gross $18 00—dis 10&10 %
Saw Rods... $10 list, dis 10&10 %

Saws.
Spear & Jackson's old pattern... $4 50 to £ gold
Spear & Jackson's American Pattern... $3·55 to £ gold
John Spear... $3 60 to £ gold
Am. Saw Co... new list
Perforated Cross Cuts, all kinds... 65c ₩ foot
Inserted Tooth... dis 10 %
All else... dis 12½ %
Disston's Circular... dis 20 %
" Mill... dis 25 %
" Cross Cut... dis 15 %
" other kinds... dis 12½ %
Livingston's Framed Wood... list net
Livingston's Butcher and Kitchen... dis 12½ %
H. W. Peace's Circulars... dis 10 %
Other kinds... dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular... new list dis 15 %
Wm. McNeice's Patent Pole Pruning Saw... dis 10 %
" " Compass Saw... net
E. M. Boynton's Lightning... dis 40 % for immediate cash
" Others... dis 15 %
Wheeler & Clemson Mfg. Co.'s Hand... dis 15 %
" " " Cross-Cut... dis 30 %

Saw Sets.
Stillman's Genuine... ₩ doz $5·00—dis 10 %
" Imitation... ₩ doz 3·25—dis 20 %
Aiken's Pattern... ₩ doz 7·00—dis 25&10 %
" Genuine... ₩ doz $15·00—dis 25 %
Hart's Patent... dis 15 %
Nash's... dis 20&10 %
Bemis & Call's... dis 20 %
Hotchkiss'... ₩ doz 5·50—dis 10 %
Common Lever... per doz $2 00—dis 20 %
Leach's... dis 15 %

Scales.
Hatch, Counter... ₩ doz $36—dis 25 %
" Tea... ₩ doz $15—dis 25 %
Union Platform... $6·00, $7·50—dis 40 %
Turnbull's... dis 20 %
Brown's... dis 25&5 %
Fairbanks'... new list dis 15 @ 20 %
Howe's... dis 15&5 %
Chatillon's Grocers'... dis 25 %
" Eureka... dis 20 %
Universal Family... dis 20 %
Scale Beams.
No. 1 300 to 1200 lbs... 90c ₩ cwt; No. 2 " "... 75c ₩ cwt } dis... 33⅓ %

Scrapers.
Box, 1 Handle... per doz $6·25, dis 10 %
" 2 "... per doz 7·50, dis 10 %
Foot... dis 60 & 10 %
Ship (common)... per doz $3 00 net
Ship—Providence Tool Co... dis 10 %

Screws.
Flat Head Iron, List of April 1, 1875... dis 62½ %
Round Head Iron " " "... dis 50 %
Flat Head Brass... dis 52½ %
Round Head Brass... dis 50 %
Round Head Silver Capped, List March 1... dis 25 %
Hand Rail... dis 55&10 %
Coach or Lag... dis 30&10 @ 40 %
Coach, Patent Gimlet Point, List Jan. 1, 1875... dis 35 %
Bed... list net
Japanned (List of Flat Head Iron)... dis 50 %
Machine—Flat Head, Iron, List Jan. 12, 1875... dis 25 %
" " Brass, " "... dis 15 %
Round Head, Iron, " "... dis 20 %
" " Brass, " "... dis 10 %
English, Flat Head, Iron; American List.
Nettlefold & Chamberlain's... dis 60&10 %
Birmingham Sc'w Co... dis 60&10 %
Bench—Iron... dis 60, 10&10 %
" —Wood, Beach... ₩ doz $3·00 net
" " Hickory... dis 20&10 %
Hand... dis 25&10 %
Jack—Bell Bottom... dis 15 %

Scythes.
Blood's German Steel, Grass... ₩ doz $10 00
" Cast " "... ₩ doz 11 00
" Silver " "... ₩ doz 12 00
" German " Grain... ₩ doz 14 00
" Cast " "... ₩ doz 15 00
" Excelsior and Granger. ₩ doz 11 00
" Young America... 10 50
" Silver Clipper... 13 00 } dis $1·50 from list
Scythe Snaths... dis 20 %

Sieves.—Mann's Patent... dis 25 @ 30 %
14 16 18 20 24 30 mesh
Iron... $4·00 4·00 4·25 4·50 4·75 6·50 ₩ doz
Plated. 4·75 5·00 5·25 5·50 5·75 8·50 "

Shears.
Cast Steel... dis 75 @ 75&10 %
Cast Iron... dis 30 %
Heinisch Sons' Trimmers and Scissors... dis 65 %
" " Standard quality Shears and Trimmers... dis 45 @ 50 %
Seymour's Straight Trimmers... dis 60&10 %
" Scissors... dis 50 %
Pruning... per doz $10 00—dis 35 %

Sheaves.
Sliding Door, M. W. & Co. list... dis 45&5 %
" R. & E. list... dis 50 %
" Patent Roller... dis 25 %
" " " Hatfield's... dis 50 %
" Russell's Anti-Friction... dis 50 %
Sliding Shutter... dis 50&5 %

Shovels and Spades.
Ames... dis 12½ %
Birmingham Shovel Co... dis 15 %
Rowland's... dis 25 %
Old Colony... new list dis 10&5 %
Middleboro' Shovel Co... new list dis 12½ %
C. E. Jennings... dis 12½&5 %
Dunning's Shovels and Scoops... dis 20&7½ %
Snow Shovels... ₩ doz $7 00 @ 8 00 net

Shovels and Tongs.
Iron and Brass Head, R. & E. list... dis 50 %
" " Hart's... dis 50&10 %
Polished Steel... new list dis 50 %

Skates.
Barney & Berry's
N. Y. Club... ₩ pair $2·75; B. & B. Club... " 3·50; All Clamp... " 4·25; Rink... " 8·00 } dis 25 %
Florence Club... per pair $3·50—dis 25 %
" Steel... per doz $9 net
Peck & Snyder's—
American Club, Polished... ₩ pair $5·00
" " Blued Top... ₩ pair $3·75 net

Slates.
Square Frames, Round Cornered, by case... dis 40&10 %
Less than a case... dis 70 %

Spoke Shaves.
Iron... dis 33⅓&10 %
Wood... dis 30 %
Bailey's... dis 20&10 %

Spoons.
Tinned Iron... dis 10 %
By the case... dis 20 %
Basting... dis 10 %
Britannia... dis 50&5 @ 55 %
" Boardman's, new list... dis 55 %
Rogers & Bro., A 1... dis 50 %
Derby Silver Co... dis 50 & 5 %
Holmes, Booth & Haydens... dis 50 %
Nickel Silver Co... dis 40 %
German Silver... dis 30 @ 33⅓ %
Tin (P. S. & W.)—
Teas... $1·50 ₩ gross, net
Tables... 2·75 " net
Stocks and Dies... dis 5&10 %

Stone.
Hindostan Stone... ₩ ℔ 6c; " Axe Stone... ₩ ℔ 8c; " Slips... ₩ ℔ 10c } dis 20&10 %
Sand Stone... ₩ ℔ 6c—dis 20&10 %
Washita Stone... No. 1, ₩ ℔ 22c net
"... No. 2, ₩ ℔ 17c net
" Slips... No. 1, ₩ ℔ 45c net
Arkansas Stone... No. 1, ₩ ℔ $1·25 net
" Slips... No. 1, ₩ ℔ $2·00 net
Grindstones, Family, J. F. Green & Bro... dis 30 %

Stove Polish.
Joseph Dixon's... ₩ gross, 6 00
Gold Medal... ₩ gross $6 00 dis 25 %

Squares.
Steel... dis 50 %; full cases, dis 50&10 %
Iron... dis 50 %; full cases, dis 50&10 %
Nickel Plated... add $2 50 @ $4 00 ₩ doz net
Try Squares and T Bevels... dis 45&10 %
Star Try Squares and Bevels... dis 30 %
Disston's Try Squares No. 1... dis 20 %
" " No. 2... dis 40 %
" " Improved... dis 20 %

Tacks.
Full Weight American Iron... dis 45&7½ %
Half Weight American Iron... dis 72½&7½ %
Carpet... dis 7½ %
Brads American Half Weight... dis 50&7½ %
Finishing Nails... ½ ⅝ ¾ 1 1¼ in. and over
₩ ℔... 25c 20c 18c 14c 12c dis 7½ %

Trunk and Clout.......⅜ ½ ¾ 1 1¼ in. and over
℔ .... 25c 20c 18c 14c 12c dis 7½%
Copper Tacks.......... ℔ 50c—dis 7½%
Iron Shoe Nails, ℔ 4-8 and longer, 9½c; 3½-8, 10c.......dis 7½%
Double Pointed.......dis 33⅓&10%

Tapes, Measuring.
American Flask and Cap Co.......dis 20%
Eddy's.......dis 20%

Tea Trays.
American Tea Tray Co.......dis 15%

Thermometers.
Tin Case.......dis 50&10%

Toe Calks.
.......℔ 13c net

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).......dis 20%
Wood Bottom.......per doz $12—dis 25&10%
All Iron.......per doz $19·50—dis 25&10%

Tinners' Tools and Machines.
P. S. & W.......list net

Traps.
Newhouse.......dis 20%
Peck, Stow & Wilcox.......dis 30%
Blake's Patent.......new list dis 25%
Mouse, Wood Choker.......℔ doz holes. 15 @ 16c
" Patent Chocker (Union Nut Co.).......℔ doz holes 16 @ 18c net
" Round, Wire.......℔ doz $1 60 to 2 00 net
" Square, ".......℔ doz 2 00 to 2 50 net
Cage, ".......℔ doz 2 50, dis 10%

Trowels.
Lothrop's Brick and Plastering.......dis 10%
Disston's Plastering.......dis 12½%
Disston's Brick.......dis 12½%
Rose's Brick.......dis 5%
Brades' Brick.......gold. dis 10%
Worrall's Brick and Plastering.......dis 20%
Garden.......dis 25%

Triers.
Butter and Cheese.......dis 25%

Ventilators (Window).
Nickel and Gilt.......per dozen $16·00 @ 19·00

Vises.
Trenton Vises, Solid Box.
40 to 160 lbs.......16c
160 and over.......15c
Peter Wright's.......℔ 15½c. gold
Wilson's Solid Box.......dis 15 @ 20%
31 to 160 lbs.......18c
160 and upward.......22c
Wilson's Parallel.......dis 30%
Sargent's ".......dis 50&10&10%
Backus & Union, Parallel.......dis 25%
Buffalo, Parallel.......new list dis 25%
Fisher & Norris' Double Screw Parallel.......dis 15&10%
Trenton Parallel.......dis 15%
Merrill's Parallel.......dis 15%
Parker's.......dis 20%
Stephens' Parallel.......dis 15 @ 20%
Bonney's Saw Filers.......per doz $20—dis 20%
Stearn's Saw Filers.......per doz $20—dis 20%

Wheel Barrows.
Canal (Pugsley & Chapman).......new list dis 10%
Coal, Garden and Stone (Pugsley & Chapman).......dis 25

Well Wheels.
Revised list.......dis 60&10%

Wire.
Brass and Copper.......dis 10%
Bright and Annealed.......Nos. 0 @ 18 dis 40 @ 45 %
" " .... " 19 @ 26 dis 47½ @ 52½%
" " .... " 27 @ 36 dis 52½ @ 57½%
Coppered....... " 0 @ 18 dis 35 @ 40 %
Galvanized. Nos. 0 to 9.......℔ 8½ @ 9c net
Galvanized, Nos. 10 to 18.......market list dis 10 @ 15%
Tinned.......dis 25 @ 30%
Cast Steel.......dis 15 @ 20%
Tinned Broom Wire.......dis 30 @ 35%
Galvanized Telegraph, Nos. 8 and 9.......℔ 9c @ 9½c
Galvanized Telegraph. Nos. 10 and 11.......℔ 10c @ 10½c
" " " 12.......℔ 10½c @ 11c
Annealed Fence. Nos. 8 and 9.......dis 40 @ 45 %
" Grape, " 10 to 14.......dis 40 @ 45 %
Fence Staples.......℔ 8 @ 8½c
Stubs' Steel Wire.......$7 00 to £ gold
Judd's Picture Wire.......dis 50

Wrenches.
American Adjustable.......dis 45%
Baxter's Adjustable "S".......dis 20%
" Diagonal.......dis 20%
Collins & Co.'s.......dis 45%
Coes' Genuine.......dis 40&5%
" Pattern (Wrought).......dis 50&10%
" " (Malleable).......dis 60&10%
Lindsay's Patent.......dis 25%
Taft's Pattern.......dis 70&10%
Davis Patent Duplex.......new list dis 25%
Bemis & Call's Patent Combination.......dis 20&5%
" " Merrick's Pattern.......dis 25&2½%
" " Brigg's Patent.......dis 15&10%
Aiken's Pocket.......per doz $10·00—dis 40&10%

Wringers.		Less than 2 doz	2 doz lots
Providence	℔ doz	$64 00	$52 00
Reliance	℔ doz	61 00	59 00
Universal—Extra	℔ doz	64 00	62 00
Novelty	℔ doz	64 00	62 00
Sherman	℔ doz	64 00	62 00
Eureka (Friction)	℔ doz	60 00	58 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 5%.
COMMON STAMPED WARE, &C.

Bucket Covers.

Quarts	½	1	2	3	4
Inch	4⅜	5 3-16	6 5-16	6⅞	7 11-16
Per gross	$2·00	2·00	3·40	4·25	5·75
Quarts		6	8	10	12
Inch		8⅜	9⅛	9⅝	10 9-16
Per gross		$6·50	8·00	8·50	11·50

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11½	12⅜	13⅜
Per gross	$15·00	18·00	22·00

Pot Covers.

Inch	7⅝	8⅜	8⅞	9⅜	9⅞	10⅜
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10⅞	11⅜	11⅞	12⅜	12⅞	13⅜
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	4·50	5·50	5·80	8·50	10·50

Deep Pie Plates.

Inch	9	10
Per gross	$8·50	10·50

Jelly Cake Pans.

Inch	9	10
Per gross	$7·50	10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	3	3⅜	3⅞	4⅛	5	
Per gross	$1·15	1·40	1·60	2·00	2·75	3·00
Rimmed	2⅜	3	3½	4	4½ inches.	
Per gross	$2·25	2·50	3·00	3·50	4·00	

T. K. Breasts only.

Inch	7½	8	8½	9	9½	10	10½	11	11½
Per gro.	$6·00	6·50	6·75	7·25	7·75	9·50	10·00	12·00	13·00

Grater Plates.

Sheet	¼	½	1
Per gross	$3·00	6·00	11·50

Scolloped Cake Pans.

		Small.	Large.
Without Tubes	per gross,	$9·00	11·50
With Tubes	"	10·50	14·00

Stamped Square Pans.

No.	½	
Per gross	$7·50	14·50

Common Square Pans (One Sheet).
Per gross.......$11·50

Milk Skimmers (Plain or Pierced).
Per gross.......$4·00

Lettered Plates

Inch	5½	6
Per gross	$3·25	4·00

Steamer Bottoms.
Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain......per gro.	$4·00	4·50	5·00	5·50	6·00	7·00
Jap'd or Burn'd.. "	6·00	6·50	7·00	8·00	8·50	10·00

Coffee Boiler Lips.

		Small.	Large.
To Rivet	per gross,	$0·80	1·10
To Solder	"	1·25	

STAMPED DEEP AND RETINNED WARE, dis 25%.

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	quarts.	2½ quarts.
Per doz	·90	1·15	1·30	1·85	2·30

Retinned Milk Pans.

Qts.	½	1	1½	2	3	4	5	6	8	10	12
℔ doz.	1·20	1·50	1·75	2·00	2·25	3·15	3·50	3·85	4·75	5·25	5·75

Dipper Bowls, Plain Stamped—
Pints.... ½ 1 Quarts.... 1 2 2½
Per doz. ·50 ·75 Per doz... 1·00 1·25 1·75

Dipper Bowls, Retinned—
Pints.... ½ ¾ 1 Quarts.... 1 2 2½
Per doz. ·75 ·90 1·05 Per doz .. 1·40 1·75 2·25

Pans.
Dish Pans. Retinned Deep—

Quarts	7	8	10	14	17	21	30
Per doz	8·50	9·50	11·00	13·00	16·00	19·00	30·00

JAPANNED TIN WARE, dis 5%.
Cannisters, Common......Pound ½ 1 2 3
Per gross $10·50 15·00 24·00 30·00
Canisters, Hinged......Pound 1 1½ 2 3 4
Per gross $19·00 25·00 32·00 37·00 42·00
Canisters, Square......Pound 2 4 6 8 12 16
Per doz $3·00 4·25 5·00 5·75 8·00 9·00
Candlesticks, Japanned.......No. 1 2
Per gross $8·00 7·00
Cake Boxes, Round.......per nest, $3·25
" Square.......per nest, 4·25
Chamber Pails, Japanned

Nos	2	3	4	5
Green, per doz	$8·00	9·00	11·00	13·00
Oak "	$9·00	11·00	12·00	13·50

Dust Pans, Corrugated.......per gross, $22·00
Box Graters.......per gross, $3·75
Molasses Cups.......Pint ½ 1 2 4
Per gross $13·00 16·00 28·00 42·00
Lunch Boxes, per doz.......7 in $2·00; 8 in. $2 50
Pepper Boxes Japanned..℔ gross small, $3·00; large, $4·00
Toy Banks, House.......No. 1 2
Per gross $7·00 5·50
Toy Banks, Gothic.......No. 1. $6·00, No. 2, 4·00 per gross
Toy Cups, Straight.......No. 1 2 3
Per gross $3·75 3·25 2·75
Toy Cups, Flaring.......No. 1, $4·25; 2, $3·75 ℔ gross
Toy Pails, Covered.......No. 1, per gross $4·00
Toy Rattles.......per gross, $2·00
Trunks. Wire Handled.......per nest (5) $1·75
Spittoons, Tin.......per gross, $27

PLANISHED TIN WARE, dis 25 @ 30%.
Planished Coffee Pots, Round.

Each	·60	·75	·85	·95	1·15	1·25	1·30	1·40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round.

Each	·70	·80	·95	1·05	1·25
Pints	2	3	4	5	6

Planished Tea Pots, Oval.

Each	·70	·80	·90	1·05	1·15	1·40	1·75
Pints	1	2	3	4	5	6	8

Planished Pepper Boxes, No. 1.......per doz., $1·52
Planished Flour Dredges, No. 3, $2·10; 4, 2·45 ℔ dozen.

Planished Round Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·00	1·10	1·20	1·40	1·60	2·00

Planished Oval Coffee Biggins.

Pints	2	3	4	5	6	8
Each	$1·15	1·25	1·40	1·60	1·80	2·25

Planished Oval Chafing Dishes, Imperial Covers.

Inch	10	12	14	16	18	20	22	24
Each	$3·85	5·00	6·25	7·60	9·00	11·50	15·00	16·50

Planished Oval Chafing Dishes, Low Covers.

Inch	10	12	14	16	18	20
Each	$3·25	4·35	5·20	6·20	7·80	9·25

Planished Low Dish Covers.

Inch	10	11	12	14	16	18	20
Each	$·70	·80	1·00	1·25	1·50	2·00	2·75

Planished Imperial Dish Covers.

Inch	10	11	12	14	16	18	20	22	24
Each	$1·55	1·70	2·00	2·60	3·15	3·45	4·60	5·45	6·30

Planished Etnas. on Stands.

Pints	1½		3	4	5
Each	$0·90	1·00	1·20	1·50	1·75

Planished Liquor Mixers.......Nos. 0 1 2
Per doz $2·00 2·10 2·45

Planished Oval Melon Molds.

Nos	2	3	4	5	6	7	8	9
Each	$·60	·65	·70	·80	·90	1·00	1·15	1·35

Planished Oval Tumbler Warmers.
To fit 1, 2, 5, and 4 O. G. Urns.......each, $2·50

Planished Oval O. G. Urns.

Nos	0	1	2	3	4	5	6	7	8
Each	$4·90	5·45	6·30	7·00	7·75	9·25	11·25	12·50	15·00

Planished Round Urns.

Nos	0	1	2	3	4	5	6	7
Each	$4·20	4·85	5·45	6·30	7·75	9·00	11·00	14·25

Planished Round Oyster Dishes, (Complete)..Nos. 1 2
Each $2·10 2·60
Planished Oyster Dish Plates.......Nos. 1 2
Each $0·25 0·30
Oyster Dish Covers.......Nos. 1 2
Each $0·30 0·35

Tea Pot Handles—P. S. & W.......dis 20%
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4½ inches.......per gross, $11·50
No. 2, Medium, 5½ " .... " 12·50
No. 3, Large, 6½ " .... " 13·50
No. 4, Ex. Large 7½ in., for Wash Pitchers &c....... " 18·00
Solid Iron. Tin Tipped.
No. 10, Small, 4½ inches.......per gross, $9·00
No. 15, Medium, 5½ " .... " 9·50
No. 20, Large. 6½ " .... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12, Bronzed and Tin-Tipped.......per gross, $13·50
Saucepan Handles, Of Best Malleable Iron.
P. S. & W.......dis 20%
Japanned.
No. 1, 5½ inches long.......per gross, $3·50
No. 2, 6 " .... " 3·75
No. 3, 6½ " .... " 4·00
No. 4, 7¼ " .... " 4·25
No. 5, 8 " .... " 4·50
No. 6, 9 " .... " 4·75
Tinned.
No. 1, 5½ inches long.......per gross, $4·25
No. 2, 6 " .... " 4·50
No. 3, 6½ " .... " 4·75
No. 4, 7¼ " .... " 5·25
No. 5, 8 " .... " 5·50
No. 6, 9 " .... " 5·75
Japanned.......per lb., ·16
Tinned....... " ·20
Iron Kettle Ears (P., S. & W.).......dis 45%
Half gross pairs in a package.

Tinned.

Nos	1	2	3	4	5	6	7	
Per gross pairs	88c	$1·00	1·50	1·75	2·10	2·75	3·75	4·50

Black.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	75c	88c	$1·35	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle Ears.

Nos	4	5	6
Per gross pairs	$1·75	2·10	2·75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos	1	2	3	4	5	6	7
Per gross pairs	$1·00	1·25	1·50	1·75	2·00	2·50	3·00

Malleable Iron Kettle Ears for Coal Hods &c.,
P. S. & W.......dis 20%
No. 10 Small.......℔ ℔. Tinned 22c; Black, 16c
No. 20 Medium.......℔ ℔, " 22c; " 16c
No. 30 Large.......℔ ℔, " 20c; " 16c
No. 40 Extra Large.......℔ ℔, " 20c; " 16c
In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in..dis 25%
Plain, 8c.; Jap'd, 9c.; Tinned, 15c. per lb.; Malleable Clips or Ears to match, Tinned.......20c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.).......dis 35%
Plain with drilled holes, per lb.......9c
Plain with Cast " 8c
Plumbers' Scrapers—(P. S. & W).......dis 25%
Extra quality, length 6 in., per doz.......$4·00

METALS.

IRON.—DUTY Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.
Foundry No. 1....... ℔ ton, $27 00 @ 28 00
Foundry No. 2....... " 25 00 @ 26 00
Gray Forge....... " 23 00 @ 25 00
White and Mottled....... "
SCOTCH.
Coltness....... " 31 00 @ 32 00
Glengarnock....... " 32 00 @ 33 00
Gartsherrie....... " 31 00 @ 33 00
Eglinton....... " 29 00 @ 30 00
Bar Iron.
Am. Refined, at mill.......nominal.....
Rails.
Welsh, gold.......℔ ton, 48 00 @ 50 00
American, at works, currency....... " 48 00 @ 52 00
Old Rails....... " 26 50 @ 27 00
Scrap.
Wrought Scrap....... " 31 00 @ 33 00

Bar Iron from Store.
Common Iron.
⅜ to 2 in. round and square.... } ℔ ton $57 50 @ 60 00
1 to 6 in. x ⅜ to 1 in.... }
Refined Iron.
⅜ to 2 in round and square.... } " 62 50 @ 65 00
1 to 6 in. x ⅜ to 1 in.... }
1 to 6 in. x ¼ and 5-16....... " 67 50 @ 70 00
Shafting Iron—2½ to 4 in....... " 72 50 @ 82 50
Rods—3-16 to ⅝ round and square....... " 65 00 @ 115 00
Bands....... " 77 50 @ 80 00
Hoops—⅜ to 2 in....... " 87 50 @ 140 00
Swedish Iron.
Ordinary sizes....... " 132 50 @ 135 00
Plow size....... " 145 00 @ 150 00

Sheet Iron.

		Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20	℔ ℔	4c	5½c	5½c
21 to 24	"	4½c	5½c	5½c
25 to 26	"	4¾c	5¾c	5¾c
27	"	5c	6c	6c
28	"	5½c	6c	6½c

Galvanized, 1 to 20, prime, ℔ ℔ 9; 2d quality...℔ ℔ 8c
" 21 to 24 " " 9½ " ... " 8½c
" 25 to 26 " " 10½ " ... " 9½c
" 27 " " 11½ " ... " 10½c
" 28 " " 12 " ... " 11c
Patent Polished.......℔ ℔ 14c
Russia, Nos. 8 to 16....... " 16½c
" Stained. No. 1....... " 15½c
Belgian....... " 10c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

⅜	5	5½	6	7 inch.
$2·50	3·50	4·50	5·25	6·50 per doz.

RUSSIA IRON.

4½	5	5½	6	7 inch.
$5·00	7·00	9·50	12·00	14·00 per doz.

COPPER—DUTY. Pig, Bar and Ingot, 5c.; old copper, 4 cents ℔ ℔; Manufactured (including all articles of which copper is a component of chief value) 45% ad valorem.
American Ingot.......℔ ℔ 23¼ @ 23½c
English " ....
SHEATHING, BRAZIERS COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot.......31c. ℔ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot.......33c. "
Braziers' Copper. 12 oz. per square foot and lighter. 35c. "
Circles less than 84 inch in diameter.......34c ℔ ℔
Circles, 84 inch diameter and over.......37c. "
Segment and Pattern Sheets.......34c. "
Locomotive Fire Box Sheets.......31c. "
Sheathing Copper, over 12 oz. per sq. ft.......30c. "
" " 12 oz. ℔ sq. ft. and lighter.......35c. "
Bolt Copper.......31c. "
Copper Bottoms, 38c. ℔ ℔.......net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.
O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier.......37c. By the case, 36c. ℔ ℔
12 oz. and lighter.......40c. " " 39c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier.......39c. By the case, 38c ℔ ℔
(And all sizes not over 30 inches wide.)
30x60
14 and 16 oz. and heavier.......41c. ℔ ℔
12 oz.......44c. "
TINNING.
14x48, by the case.......6c. ℔ sheet
14x48, less than case.......8c. "
Other sizes not larger than 30x60.......2½c. ℔ sq.
Larger than 30x60.......5c. "

LEAD—DUTY Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb.
Spanish.......7c gold
German Refined.......6⅝c gold
English.......7c gold
American.......6⅜ @ 6½c gold
Bar.......dis 10%.......8½c.
Pipe.......dis 10%.......9½c.
Tin Lined Pipe.......dis 10%.......16½c.
Sheet.......dis 10%.......9½c.
Shot.......dis 10%. Drop, 9½c. Buck, 10½c.
BABBITT METAL.
N. P. U.......℔ ℔ 8½ @ 9c
A, 25c.; B, 30c.; C, 15c.; D, 12c. ℔ ℔.

SOLDER.......No. 1, 15c; No. 2, 13½ @ 14c

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3½ cents per lb. and 10% ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool.......15 @ 16c
Spring.......10c
Homogeneous.......12½c
Tire.......12½ @ 13½c
Machinery (round and square).......10 @ 11c
File.......11c
Sheet.......14 @ 16c
Saw Plate, mill and mulay.......14 @ 16½c
Saw Plate, gang and X cut.......13 @ 14c
" circular as to size.......18 @ 30c
Chrome Steel.
Tool.......℔ ℔ 20 @ 21c
Tool, extra fine....... " 40 @ 75c
Spring.......℔ ℔ 12c and upward
Machinery.......℔ ℔ 14c
Hammer....... " 15c,
Gun or Homogeneous....... " 16c
English Steel.—payable in gold, net.
" Best Cast.......℔ ℔ 17½c
" Extra Cast....... " 15½c
" Round Machinery, Cast.......℔ ℔ 10½ @ 11½c
" Swaged, Cast....... " 19½c
" Best Double Shear....... " 17½c
" Blister, 1st quality....... " 14½c
" " 2d quality....... " 13 c
German Steel, Best....... " 11½c
do 2d quality....... " 10½c
3d quality....... " 9½c
Sheet Cast Steel, 1st quality....... " 17½c
" " 2d quality....... " 14½c
" " 3d quality....... " 12½c
File Steel, Flat and ½ Round....... " 12½c
Square and Round....... " 12½c
M" .... " 13½c
Taper to ½ inch....... " 16c
Taper 3 and 3½ inch....... " 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.
Silesian, cash.......6⅞ @ 7c., gold
American ".......7½ @ 11c.. currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 1·1c per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca.......℔ ℔ 24½c., gold
Straits.......℔ ℔ 20 @ 20½c, gold
English.......℔ ℔ 19½ @ 20c., gold

CHARCOAL TIN PLATE.
I C 10x14, Prime Charcoal.......10·50
12x12, " ....11·00
14x20, " ....11·25
I X 10x14, " ....12·75
12x12, " ....13·25
14x20, " ....13·75
D C 12½x17 " ....10·00
D X 12½x17 " ....12·25
For each additional X add.......2·25

COKE TIN PLATE.

	Best	2d Quality.	Ordinary.
I C 10x14	$9·25 @ 9·50	8·75 @ 9·00	8·50 @ 8·75
I C 12x12	10·00 @ 10·25	9·50 @ 9·75	
I C 14x20	10·00 @ 10·75	10·00 @ 10·25	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$9·50	8·50 @ 9·00	8·00 @ 8·25
I X 14x20	11·75		
I C 20x28	19·50	18·00 @ 19·00	17·00 @ 17·75
I X 20x28	24·00 @ 24·50		
I C 20x200	28·25 @ 28·50		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ℔ ℔.
Sheet.......cask 10½c
".......open 10½c

Old Metals.

(Dealers' Selling Price.)
Copper....... @ 20
Yellow metal.......14 @ 15
Brass.......13 @ 14
Heavy Composition.......17 @ 18
Old lead, solid.......6 @ 6¼
Tea lead....... 5
Wrought Iron.......1⅛ @ 1¼
Sheet Iron.......0⅞ @
Cast Iron.......1 @ 1⅛
Machinery Iron.......1⅛ @
Zinc.......5 @ 5½
Pewter, No. 1.......17
" No. 2.......10 @ 12
Spelter.......5 @

Paints, Oils, etc.

Paints.
Black, lamp—Coach Painters.......℔ ℔ 30c
" " Ordinary.......6c
" Ivory Drop, fair.......15c
" " best.......26c
Black Paint, in oil.......kegs, 8c.; ass't'd cans, 11 c
Blue, Prussian, fair to best.......50 @ 75c
" " " in oil.......35 @ 65c
" Chinese, dry.......83c
" Ultramarine.......25 @ 30c
Brown, Spanish.......1½c
" Van Dyke.......9c
Carmine, 40.......$12 00
Green, Chrome.......15 @ 28c
" " in oil.......18 @ 27c
" Paris.......good, 30c: best, 40c
" " in oil....... " 30c; " 45c
Mineral Paints.......1½ @ 4c
Orange Mineral.......14c
Red Lead, American.......9½c
" " English.......10½c
" Venetian (N. C.) dry.......2½c
" " in oil.......ass't'd cans, 11c; kegs, 8½c
" Indian, dry.......10c
Rose Pink.......13c
Sienna American, Raw.......4c
" Burnt.......4½c
" " in oil.......16 @ 26c
" Raw " ....15 @ 25c
Umber, Burnt.......4 @ 8c
" " in oil.......16 @ 21c
" Raw.......3½ @ 7½c
" " in oil.......16 @ 22c
Vermillion, Chinese.......
" English.......1 10, gold
" Trieste.......1 10 "
" American, Common.......23c
White Lead, American, pure dry.......10c
" " " in oil.......11c
White, Paris, English, prime.......in bbls. 2¼ @ 2½c
Yellow Ochre, French.......2½ @ 2¾c
" " " in oil...ass't'd cans, 11c; kegs, 8½c
" " Vermont.......in casks 1½c
" Chrome.......17 @ 27c
" " in oil.......18 @ 28c
Zinc White, American No. 1 dry.......9c
" " 1, in oil.......11c
" French (Paris).......11 c
" " in oil.......19

Oils.
Linseed Raw.......℔ gal. casks, 68c. bbl., 69c
" Boiled....... " 73c. " 74c
Whale, Crude....... "
" Bleached Winter....... " 80c
Sperm, Crude....... " 1·65
" Winter unbleached....... " 1·85
" " Bleached....... " 1·90
Seal, Extra Refined....... "
Lard, Pure Winter....... " 1·30
" Spring....... " 1·20
Cotton Seed, Crude....... " 60c
" Southern Yellow....... " 65c
" White.......
Neatsfoot, Winter.......70c @ $1·10
Natural Lubricating.......38c @ 40c

Sundries.
Asphaltum.......9c
Benzine.......℔ gal. 16c
Chalk.......1½c
" Block.......
Dryer, Patent, Am'n.......ass't cans, 10½c.; kegs 9c
" " English....... " 11c.; " 9
Flocks.......
Frostings.......50c
Glue, White.......33 @ 47c
" Sheet.......30c
Glaziers' Points, Zinc.......9c
Gum, Copal.......36c
" Damar.......25c
" Shellac, English.......85c
" " " dark.......75c
Litharge.......10c
Pumice Stone, selected Lumps.......4 @ 6c
" powdered.......4c
Putty in bladders.......3½c
" in bulk.......3c
Rotten Stone, soft, English.......8c
Spirits Turpentine.......34c
Whiting, Spanish.......1c

Glass.
French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE THICK.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$7·50	$6·75	$6·25	$5·75
11 x 14 to 16 x 24	8·50	7·75	7·25	6·50
18 x 22 to 20 x 30	10·75	9·75	8·75	7·75
15 x 36 to 24 x 30	12·25	10·75	9·00	
26 x 28 to 24 x 36	13·00	11·50	9·75	
26 x 36 to 28 x 44	14·50	13·25	10·75	
26 x 46 to 30 x 50	15·00	14·00	11·25	
30 x 52 to 30 x 54	16·00	14·50	12·00	
30 x 56 to 34 x 56	17·25	15·50	13·50	
34 x 58 to 34 x 60	18·25	17·25	15·00	
36 x 60 to 40 x 60	20·75	18·75	17·25	

DOUBLE THICK.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$12·00	$11·00	$10 00	$9·25
11 x 14 to 16 x 24	13·75	12·50	11 75	10·50
18 x 22 to 20 x 30	17·25	15·75	14·00	
15 x 36 to 24 x 30	19·75	17·25	14·50	
26 x 28 to 24 x 36	21·00	18·50	15·75	
26 x 36 to 26 x 44	23·25	21·25	17·25	
26 x 46 to 30 x 50	24·00	22·50	19·00	
30 x 52 to 30 x 54	26·75	23·25	19·25	
30 x 56 to 34 x 56	27·75	25·00	21·75	
34 x 58 to 34 x 60	29·25	27·75	24·00	
36 x 60 to 40 x 60	33·25	30·00	27·75	

Sizes above—$12·00 per box extra for every 5 inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches will be charged in the 84 united inches bracket
Discount 50 @ 50&5 %.

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Grindstones.

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INDEPENDENCE,
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North Amherst, Ohio.

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Soapstone Register Borders.
For particulars, address,
UNION STONE CO.,
6 Exchange and 26 Devonshire Streets, Boston, Mass

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Emery Wheel Co.,
Weissport, Penn.
Manufacturers of
"LEHIGH" Emery Wheels and Machines
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SELF-ADJUSTING

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Burglar Alarms, Call Bells, &c.
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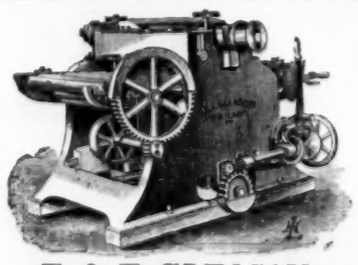
N. B.—A Specialty made of Experimental work.



E. & F. GLEASON,
Manufacturers of
IMPROVED WOOD TOOLS.
37 Haydock St., Philadelphia.

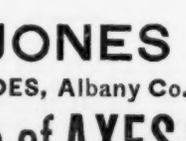
L. COES'

Genuine Improved Patent

SCREW WRENCHES.

Manufactured by

L. COES & CO.,
Worcester, Mass.

Established  in 1839.

Registered March 31, 1874.

We invite the particular attention of the trade to our New Straight Bar Wrench, *widened*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1868 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

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Warehouse, 97 Chambers St., & 81 Reade Sts., N. Y.
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M. H. Jones. A. G. Peck.

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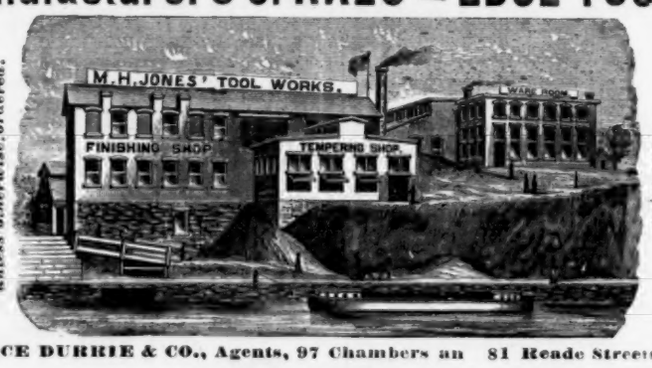
COHOES, Albany Co., N. Y.

Manufacturers of AXES AND EDGE TOOLS.



All goods stamped and labeled M. H. JONES & CO. unless otherwise ordered.

Sole right to the use of the TENEYCK AXE MFG. CO'S. Trade Mark.

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MANUFACTURERS OF

HAMMERED,

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HORSE NAILS,

FROM

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Orders promptly filled at lowest market rates.

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Pointed, Polished & Finished Horse Shoe Nails

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Acknowledged the Best.

The best machine by far, for the trade and the public.

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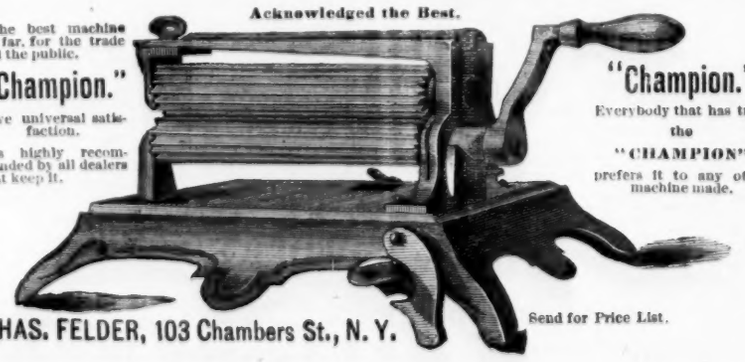
Is highly recommended by all dealers that keep it.



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JEWETT & SONS' PERFECTLY PURE WHITE LEAD.

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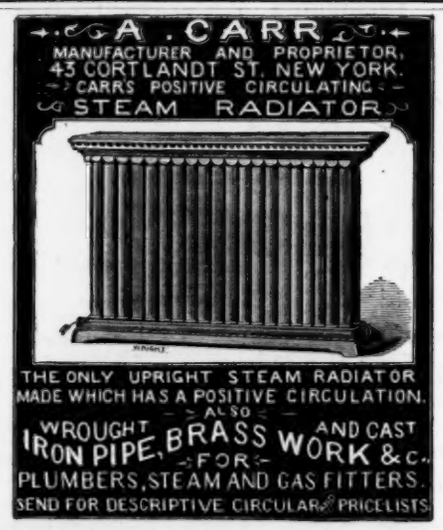

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Fast Cutting—Free from Glazing—It is the best Solid Emery Wheel.

Diamond Solid Emery Wheel

Prices: 10x1, $2·90; 14x2, $9·75; 18x3¼, $20·00; 24x3, $42·00. All other sizes at proportionate prices. State diameter of Holes in your orders for Wheels.

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For the rapid and perfect grinding of Planer, Paper Cutting, Leather Splitting and other long Knives.

These goods are unsurpassed for elegance of design, workmanship, capacity and durability. First premium awarded by American Institute, N. Y., 1870 and '73; Medal and Diploma by M. C. M. A., Boston, 1874.

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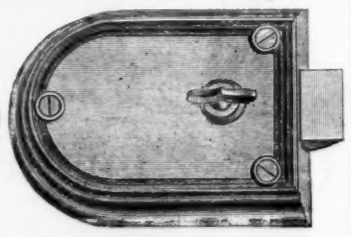
Comprising

Store Door Locks, Night Latches, Drawer, Desk and Pad Locks,

All of which are furnished with



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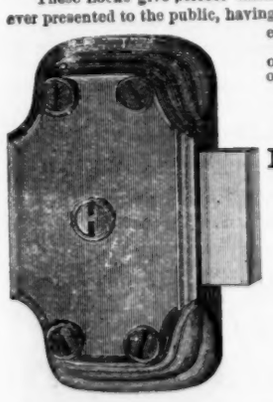
Which are stronger than steel, ***and cannot be affected by rust,*** and will remain bright and clear under all ordinary circumstances.

A candid examination will convince the most unbelieving, that for simplicity, durability, convenience, and safety, they challenge comparison with any now before the public. Being made entirely by new and expensive machinery, especially constructed to manufacture them, ***they will rival the best made Locks in Finish and perfect operation.***

These Locks give perfect satisfaction, because they are the safest, cheapest and most durable Lock ever presented to the public, having ***thirty-five*** finely finished Brass Tumblers in each Door and twenty-eight in each Drawer Lock, each one being finely false notched.

Each tumbler bearing on the key at two different points while locking or unlocking, without the aid of springs, which cannot be said of any other patent Tumbler Locks in use.



THE LOCKS ARE FITTED TO THE KEYS,

And not the Keys to the Locks.

Hence Counterfeit Keys cannot be made.

For descriptive list and terms, address,

UNION NUT CO., Sole Agents,

78 Beekman Street, New York.

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CONCORD TRADE (CONCORD USE N.H.) MARK. AXLES

Will Run Easier, carry a Larger Load, and Wear Longer than any other Axle in the Market.

All GENUINE Concord Axles are stamped with above trade mark. Manufactured only by

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GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

JOHN WILSON.

BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

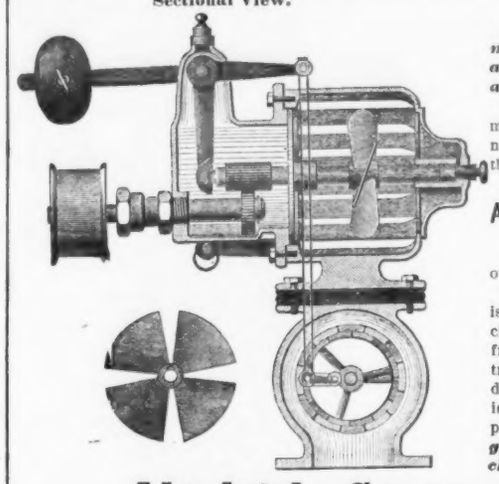
HUNTOON GOVERNOR

For Stationary and Marine Engines.

WARRANTED

The Most Perfect Steam Governor in the World.

Sectional View.



Largely in use by the ***U. S. Government at Treasury Department, State and Custom Houses, Navy Yards and U. S. Vessels.***

Also by leading manufacturing establishments, Rolling, Saw and Paper Mills, Tanneries, etc., throughout the country, where the most positive uniform speed is required.

The use of this Governor insures

A positive saving in Steam of from 10 to 20 per cent.

over any other Governor in use.

This Governor possesses no characteristics in common with others, either in principle or operation. We refrain, therefore, from entering into comparisons. The Centrifugal or Ball Principle is entirely abandoned in this invention, and the valve lever is sustained with the same velocity in one position as another. ***No matter how great, violent or sudden may be the changes of load,*** we warrant it to

Absolutely Govern the Engine,

which will run uninfluenced by the varying pressure of steam, be it thirty or eighty pounds.

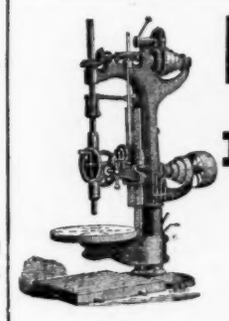
In a moment's time the revolutions of the driving wheel can be changed to exactly the speed required without stopping any of the mechanism, remaing perfectly governed wherever set.

These Governors are fully Warranted in every Particular.

Address, for circulars of references, &c.,

Huntoon Governor Co.,

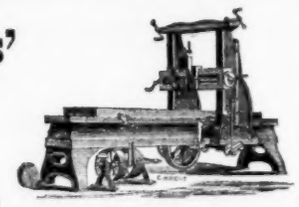
Lawrence, Mass.



Fitchburg Machine Co.

Manufacturers of

Machinists' TOOLS.

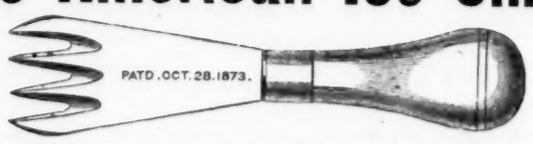


Office and Works,

Sumner Street,

FITCHBURG, MASS.

The American Ice Chisel



Is superseding all others. It will save your time, save your ice, save your refrigerator, save your money. It shave more rapidly than a Crusher, and splits as true as a saw. The blade is of the best English Steel, carefully tempered and plated to prevent rust. Address orders,

THE AMERICAN ICE CHISEL,

100 Chambers Street, or P. O. Box 1402, New York.

VERONA TOOL WORKS.

Metcalf, Paul & Co.,

PITTSBURGH, PA.,

Manufacturers of

RAILROAD TRACK TOOLS

Blacksmiths', Mining and Masons' Tools.

Also the VERONA NUT LOCK,

An Oil-Tempered Steel Spring that takes up Expansion of the Bolt, and keeps a perfectly tight joint. Solid Steel Tamping and Clay Picks.

RICHARD DUDGEON,

No. 24 Columbia Street, New York,

MAKER AND PATENTEE OF

Hydraulic Jacks and Punches.

ROLLER TUBE EXPANDERS

And Direct-Acting Steam Hammers.

Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS, made to order

---

DIRECT-ACTING

Steam Pumps,

Manufactured and for sale solely by

STEELE & CONDICT,

TITAN IRON WORKS, Jersey City, N. J.

Office and Salesroom

88 Liberty Street, New York.

No auxiliary valves used. Direct connection between piston rod and valve movement. No knocking or jarring. Circulars and price lists sent upon application.

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Munn & Co., 37 Park Row, New York

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CLARK TOMPKINS

Manufacturer and Patentee of

UPRIGHT ROTARY

Knitting Machines,

Cone Winders for Hosiery Yarns,

NAPPERS FOR HOSIERY GOODS,

Stop Motions & Alarms for Knitting Machines,

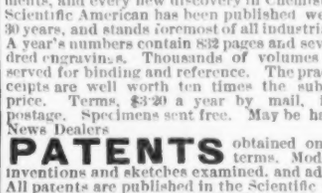
Flock Cutters, and Flock Renovators.

EXTRA PARTS FURNISHED PROMPTLY.

☞ I am also prepared to furnish anything in the line of Gear Cutting from 5½ feet to ⅜ of an inch in diameter, any shape of tooth desired; Racks, Worms, Worm Wheels, Screws any size or number of threads to the inch, Wood Planing, Iron Planing, Large Lathe Work, Gear Cogging, Shafts, Hangings and Pulleys, also all kinds of Mill Work, Jobbing, and Machinery in general.

Shop, Foot of Cypress St., Troy, N. Y.

Particular attention paid to Experimental Machinery. We aim to maintain our reputation for doing work well.



CROSSLEY'S Patent Lubricator GLOBE VALVES, &c.

Corner **Adams & John Sts., Brooklyn, N. Y.**

Bennett Hotchkiss and N. C. Stiles' Patent.

This Drop (which has been illustrated in this journal of that class in which the Hammer is raised by a stiff belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The patents we are working under are those of BENNETT HOTCHKISS (who in an interference case with Goulding and Cheney was declared the first inventor) and N. C. STILES. Our improvements consist:

First.—Of an arrangement of parts that makes it the most complete Jobbing Hammer, and will take the place to a great extent, of all other kinds for forging. In addition to the upright rod, which is operated by the hammer to open and close the rolls, we place another rod the lower end of which is secured to the end of a lever which is operated by the hand or foot, which operation also opens and closes the rolls at will. The lower end of this rod has a slot, so that the action of the hammer will not disturb the hand lever, thereby preventing the hand being injured, as otherwise would be the case.

Second.—No dog is used on the upright to hold up the hammer. The belt or board passes up between two clamps located under the rolls, so arranged that as the hammer ascends they will freely open of themselves, but on descending they will close and hold up the hammer. To let the hammer fall the clamps are opened by pressure upon the foot treadle.

Third.—The board or belt is secured to the hammer by an elastic connection, which prevents the sudden jar and destruction of the same. The back roll is made adjustable to different thicknesses of board or belt, as also are the clamps. An adjustable collar on the upright rod allows the operator to obtain *any hight* of blow desired automatically. If one blow is wanted, press upon the treadle and remove the pressure as soon as the blow is given. Keep the foot upon the treadle and the blows will be repeated until the pressure is removed. If a blow of less hight than the collar is set for is required work the hand lever, which will give you any hight of blow desired. The hammer can be held up at any point below the collar by bringing the hand lever into action when the hammer is at the desired hight, so that the next blow can be given from a state of rest, of less hight than the collar is set for. This is a feature no other drop has; that is, the first blow struck can be of less hight than the second or third, and obtained from a state of rest. A gentle pressure upon the treadle will allow the hammer to go down slowly, but it will stop and remain suspended at any point as soon as the pressure is removed.

The clamps in holding up the hammer keep the board from touching either roll and prevents the same from being worn uneven.

Manufactured only by the

Stiles & Parker Press Co.,

MIDDLETOWN, CONN.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 6 per cent. per annum.

Anvils.—Solid Cast Steel........................₩ ℔ 14c
Peter Wright's, (Advanced April 1st.) ₩ ℔, gold, 11½c
Wilkinson's........................" 11c
Eagle........................list 11 cents—dis 20 @ 20&10 %

Apple Parers.—Union........................per doz $7 50
Skeleton........................" 7 50
Victor........................" 7 75
Domestic........................" 7 75
Reading........................" 7 75
Bay State Paring, Coring and Slicing........" 12 00
" " Peach Parers........................" 10 50

Axes.—Mann's Light..............Per doz. $12 00 @ 11 50
Hunt's Light........................" 14 00 @ 12 50
Red Indian, all sizes........................" 12 00 @ 11 50
Red Chieftain, all sizes........................" 12 50 @ 12 00
Crown Prince........................" 13 50 @ 12 00

Augers and Auger Bits.—Pierce's Pat. Twist Bits........................dis 30 %
Douglass' & Ives' Bits........................dis 40&10 %
Connecticut Valley Auger Bits........................dis 40&10 %
Cook's Bits........................dis 40 10&10 %
Jennings' Bits........................dis 10 %
Bates' Nut Augers........................dis 40&10 %
Douglass' & Ives' Augers........................dis 40&10 %
Watrous' Ship Augers........................dis 40&10 %
Bonney's Pat. Hollow Augers........................dis 10&15 %
Stearns' Patent Hollow Augers........................dis 25 %

Balances.—
Landers, Frary & Clark's......} Sold on Morton's new
Morton's........................} List..........dis 50 %
Chattillon's........................}
Common Spring with Hook........₩ doz $1 38 @ 2 00

Bells.—Bevin Bros. Mfg Co. Light Hand Bells........................dis 70 %
Common (Tissue Paper Weight)........................dis 70&10 %
Swiss Pattern Hand Bells........................dis 50 %
Connell's Door Bells..............dis 50&5 @ 50&10 %
Gt. Western & Kentucky Cow.. dis 50&10 @ 50 10&5 %

Boring Machines.—Bates' Mfg. Co., complete with augers........................dis 20 @ 25 %
Douglas Mfg. Co., complete with augers..dis 20 @ 25 %
Common Boring Machines, no Augers.....$4 00 @ 3 75
Angular " " ..... 5 00 @ 4 75

Bolts.—Eastern Carriage Bolts..............special prices
Western " " ...."
Philadelphia " "........................dis 60 %
" Eagle, (Coleman's)........................dis 60 %
Wrought Shutter, Stanley..............dis 50 @ 50&10 %

Braces.—Barber's........................dis 40&5 %
Backus........................dis 50 %
Bartholomew's American Ball... .dis 10&10 @ 15&10 %
Spofford........................dis 50 %

Butts.—Cast Fast Joint, Narrow... dis 25&10 @ 30&10 %
" " Broad......dis 35&10 @ 40&10 %
Cast Fast Loose Joint..............dis 45&10 @ 50&10 %
" Acorn, Loose Pin..............dis 40&10 @ 45&10 %
" Mayers & Parliament..........dis 35&10 @ 40&10 %
" Acorn Jap'd..............dis 40&10 @ 45&10 %
Wrought Loose Pin........................dis 35&10 %
" Table Hinges and Back Flaps.....dis 30&10 %
" Narrow........................dis 30&10 %
" Loose Joint........................dis 35&10 %
Parker's Blind Butts....}
Shepard's " ....} Discount 50&10 % by the case
Garretson's " ....} 60 %.
Clark's " ....}
Lull & Porter's ....}
Garretson's Blind Butts Light No. 0....} Discount 60 %
" " Lull & Porter Pattern } By the case
Cherrytree Blind Butts........................} 60&10 %

Chains.—German Halter........................dis 20 %
" Coil........................dis 20 %
Galvanized Pump........................net 13 @ 13½c
Best Proof Coil Chain—

₩ ℔...	14	10½	9½	9	8¾	8½	8c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 560 lbs., ½c per lb. less Common Chain, ½c per lb. less.

Chisels.—Socket Framing..............dis 60 @ 60&10 %
Socket Firmer..............dis 60 @ 60&10 %
Tang "..............dis 40&10 @ 50 %
Beatty's Framing and Firmer........................dis 20 %

Casters.—Iron Bed..............dis 30&10 @ 40 %
Porcelain Wheel Bed..............dis 30&10 @ 40 %
Iron and Brass Wheel Plate.... dis 40 @ 40&10 %
Porcelain Wheel "..............dis 50 @ 50&10 %

Clothes Wringers.—Universal..............per doz $64 00
Novelty........................" 64 00
Discount on 2 dozen lots, $2 per dozen.

Coffee Mills.—Common Box and Side..........dis 15 %
Patent Box and Side........................dis 15 %

Cutlery.—American Pocket (best)..............dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices

Drawing Knives.—Hart Mfg. Co.'s..............dis 60 %
Adjustable Handle..............dis 10 @ 15 %
Beatty..............dis 15 @ 20 %

Fry Pans.
Tinned........................dis 40 @ 45 %

₩ doz..	$3 50	4 00	4 50	5 00	5 50	6 50	7 50	9 00	10 00
No.....	0	1	2	3	4	5	6	7	8

Burnished........................dis 40 @ 45 %

₩ doz..	$3 00	3 75	4 25	4 75	5 25	6 00	7 00	8 00	9 00
No.....	0	1	2	3	4	5	6	7	8

Files.
Nicholson Mill Files........................new list
" Bastard........................"
" Taper........................"
Butcher's Mill (Advanced March 5th)...$5 25 to £ gold
" Bastard.............. 5 25 to £ gold
" Taper.............. 5 25 to £ gold

Fluting Machines.
K. F. M.—4½ in. rolls, $5 50........................dis 15 %
" —6 in. rolls, $6 50........................dis 15 %
Mrs Knox—4 in. rolls, $5 75........................dis 20 %
" —6 in. rolls, 7 00........................dis 20 %

Hammers.
Yerkes & Plumb's........................dis 15 %
Hammond & Son's........................dis 15 %
Veree........................dis 20 %

Hatchets.
Beatty's........................dis 15 @ 20 %
Shingling and Half. { ₩ doz...$7 00 7 50 7 75 8 00 / No...... 1 2 3
Yerkes & Plumb........................dis 15 %
Shingling and Half. { ₩ doz...$7 00 7 50 8 00 8 50 / No...... 1 2 3 4
Claw.... { ₩ doz..........$7 50 8 00 / No.......... 1 2 3

Hinges.
Strap and T, (Changed March 24)..............dis 45 %

Horse Nails. Nos.	6	7	8	9	10
Ausable	27	25	24	23	22
Globe	28	26	25	24	23
Brundage	26	24	23	22	21

Nos. 5	6	7	8	9	10
Putnam 32	28	26	25	24	23

On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %

Knobs.—Door, Mortise and Rim.
Makes in Combination..............new list dis 45&5 %
Extra discount for cash 2 %
Mineral and Rim........................dis 5 %

Locks and Latches.—Rim and Mortise.... dis 45&5 %
Extra discount for cash 2 %
Till and Cupboard........................dis 25 %
American Padlocks........................dis 50 %
Scandinavian Pad Locks.

₩ doz......	$10 50	10 50	12 00	12 00	15 00	15 00	} dis 15 %
No..........	9	9½	10	10½	11	11½	
₩ doz..........	$18 00	18 00		22 00		22 00	} dis 15 %
No..........	12	12½		13		13½	

Trunk Locks........................dis 5 @ 10 %
Thumb and Roggens Latches........................dis 25 %

Lanterns.—Square Candle and Oil..............dis 10 %
Globe for Oil........................dis 10 %
" " Kerosene........................dis 10 %
Tubular Lanterns........................dis 10 %

Mattocks.—Long and Short Cutter..............dis 25 %
Western Pattern........................dis 25 %
Pennsylvania Pattern........................dis 15 %

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets........dis 20 %
Stebbins' Gates..............dis 60&10 @ 65&10 %
Lincoln's "..............dis 40&10 @ 50 %
Landers, Frary & Clark's Petroleum........dis 15&10 %
Taylor's Petroleum Faucets........................dis 20&10 %
Brass Liquor Cocks........................dis 20&10 %

Meat Cutters.—Dixon's........................dis 15 %
Woodruff........................dis 15 %
Stowe........................dis 15 %
Hale's........................dis 25 %
Stuffers........................dis 10 %

Planes.—Auburn Tool Co.. "Bench"..............dis 40 %
Second Quality........................dis 50 %
Metallic Plane Co........................dis 25&5 %
Evans Pat. Circular........................net

Plumbs and Levels.
Adjustable........................dis 60&10 %
Non-Adjustable........................dis 60, 10&10 %

Plane Irons.—American........................list net
Butcher's........................gold £, $5 50

Picks.—Philadelphia........................net
Pittsburgh........................net

Rules..............dis 60, 10&10 @ 70 %

Rakes.—Cast Steel Garden.............. dis 40 @ 40&5 %
Malleable Garden..............dis 40 @ 40&5 %
Wood Head Iron Teeth........................dis 40 %

Steelyards.—American Pattern........................dis 15 %

₩ doz.....	$5 50	7 00	9 00	10 00	11 00	12 00
No.........	50	100	150	200	250	300

English Pattern........................dis 15 %

₩ doz......	$7 00	8 67	10 67	12 67	14 67	16 67
No.........	50	100	150	200	250	300

L. F. & C. Excelsior........................dis 10 %

₩ doz........	$9 00	10 00	12 00	15 00	18 00	21 00
No....	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.............. ₩ doz. $10 00 net
Golden Clipper No. 10, Boxed and Sharpened..............₩ doz $9 75 net
Green Clipper No. 5, Boxed and Sharpened..............₩ doz $9 50 net
Common Scythes..............₩ doz $7 50 @ 9 00

Squares.—Steel and Iron, new list..............dis 50 %

Saws.—Disston's Cross Cut........................dis 15 %
Disston's Hand........................dis 12½ %
W. McNiece's H'd, Cross-Cut & Circ'r, new list. dis 15 %
Boynton's Lightning, new list........................dis 40 %
" Champion........................dis 45 %

Shovels and Spades.
Rowland's Plain Back, Jan. 23d........................dis 25 %
" Back Strap "........................dis 25 %
Oliver Ames & Sons..............new list dis 12½ %
Brady Shovel Co........................dis 12½&5 %

Sad Irons.—Richmond (polished face)......per lb. 3½c
Richmond (polished face)... by the cask " 3¼c

Stone.—Arkansas Oil, No. 1..............₩ ℔ $1 38
Turkey Oil, No. 1........................" 1 00
Washita Extra........................" 30c
" No. 1........................" 22c
" " 2........................" 18c
"........................" 5½c

Screws.—Iron........new list, April 1st, 1875, dis 62½ %
Brass........................dis 52½ %

Spoons.—
Plated..............dis 40&10 @ 50 %
Britannia, Boardmans (new list)..............dis 50&10 %
" Parkers (old list)..............dis 50 %
German Silver........................dis 30 %
" Light..............new list dis 35 %
Lalance & Grosjean Iron........................dis 10 %

Springs.—Gray's Door..............dis 50 @ 50&10 %
Torry's Door..............dis 50 @ 50&10 %

Stocks and Dies........................dis 10&5 %

Stove Polish.—Gem..............₩ gross, $5 00
Onyx........................" $5 00

Try Squares.—Winterbottom.............. dis 10 @ 15 %
Stanley Rule and Level Co........................dis 45&10 %
Willis Thrall, No. 2........................dis 30&10 %
Disston's No. 2........................dis 40 %

Tacks, &c.—Half Weight Tacks..............dis 72½ %
" " by the case...dis 72½&7½ %
Clout and Finishing Nails........................7½ %
" " " by the case..............dis 7½ %

Traps.—Genuine Oneida—Newhouse list........dis 20 %
Imitation " " "........................dis 30 %

Vises.—Solid Box, currency..............₩ ℔ net 14c

Wrenches.—Coes Genuine..............dis 40 @ 40&5 %
Coes Imitation Wrought Bar..............dis 50&5 @ 50&10 %
" " Malleable Bar.............. dis 60&10 %
" (Kellogg) Malleable Bar..... dis 65&10 %
Tafts Pattern (Wrought Bar)..............dis 70 @ 70&10 %
Philadelphia Tool Co.'s Pat. Duplex..............dis 25 %
" " " Improved Baxter..........dis 25 %
" " " Adjustable Fork..........dis 25 %

Wire.—No. 0 to 18.....(Advanced April 24th)....dis 40 %
No. 19 to 26.... " " ..dis 47½ %
No. 27 to 36.... " " ..dis 52½ %
Coppered 0 to 12..............dis 15 @ 20 %
Tinned Broom Wire........................dis 25 %
Galvanized Wire No. 1 to 18........................dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.
June 1, 1875.

Augers—Snell Mfg. Co........................dis 25 %
Bits, Auger—Snell Mfg. Co........................dis 25 %
Phœnix........................dis 25 %
Bells, Cow—Yaw's Genuine........................dis 40 %
Bolts—Carriage and Tire........................dis 30 %
Braces—Bit, Spofford's Patent........................dis 75&5 %
Brads, Cut........................dis 50 %
Boards—Stove, Brooks' Patent..............dis 50&7½ %
Butts—Brass........................dis 35 %
Wrought Narrow........................dis 30 %
" Broad, Loose Joint........................dis 30 %
" Table and Back Flaps........................dis 35 %
Wrought Butts, Loose Pin........................dis 30 %
Belting—Rubber........................dis 35 %
Leather, new list, oak tanned..............dis 30 @ 10 %
Brick—Bath (box of 2 doz) Best English..............dis 20 %
" Rutherford........................$1 25
Can Openers—Sprague's........................$1 00
Cases—Parlor Coal Hod........................dis 50 %
Chalk—White, Carpenter's........................dis 10 %
Red, Carpenter's..............₩ gross, 57c
Blue, " "........................" 90c
Chisels—Firmer Socket........................" $1 00
Framing Socket..............dis 60, 10&10 %
Corner Socket Chisels..............dis 60, 10&10 %
Slick's Carpenters'..............dis 60, 10&10 %
Castings—Malleable..............dis 60, 10&10 %
Egg Beaters—"Peerless"..............₩ ℔ 10c
"Centripetal"..............per doz $3 00
Elbows—Corrugated..............per doz 5 00

	5	5½	6	7	
Charcoal	$3 50	4 50	5 25	6 50	} dis 10 %
Russia	7 00	9 50	12 00	14 00	}

Files—Malschoss Bros.
Fluters—Geneva Hand........................dis 50 %
Freezers Ice Cream—"Champion..............₩ doz. $15 00
Hammers—Henry W. Kip's........................dis 33⅓ %
Hinges, Gate—Shepard's........................dis 7½ %
Hinges—Window Blind—..............dis 30&10 %
Shepard's and Standard.
Wrought Strap and T........................dis 60&10 %
Hods, Coal—Plain Black and Galvanized.......dis 33⅓&10 %
Funnel, Black and Galvanized........................dis 10 %
Fancy and Helmet........................dis 10 %
Sad Irons........................dis 10 %
Kettles—Brass........................3¼c
Copper, "Hand Made"..............₩ ℔. 45c
Enameled..............dis 40 @ 45 %
Knives, Drawing—Oval No. 1..............dis 50&10 %
Razor Blade..............dis 60, 10&10 %
Lanterns "Peerless. ....No. 1 5 10..............dis 60&10 %
₩ doz $36 00 $10 50 $13 75 dis 10 %
Tubular........................$11 00
" with Guards........................11 50
Machines—Apple Paring, "Turn Table"...... 7.75 ₩ doz
Machines, Boring—Snell's........................dis 20 %
Mills, Coffee—Box and Slide, common..............dis 15 %
Box Union and Eagle........................dis 15 %
" American........................dis 20 %
Molasses Gates—"Self Measuring"........................dis 20 %
Nails—Clout and Finishing........................dis 7½ %
Shoe........................dis 7½ %
Horse, Ausable.......No. 5 6 7 8 9 10
" " 30 27 25 24 23 22c
" " Pointed & Polished..............add 1c ₩ ℔
" " 1000 lbs........................dis 5 %
" Clinton..............No. 6 7 8 9 10
21 19 18 17 16c
Packing—Rubber........................dis 30 @ 10 %
Paint—White Lead, U. S. Gov't..............₩ ℔ 8¼c
Rivets—Iron, Black and Tinned..............dis 25&7½ %
Rope—Manila, ⅜ inch and larger..............₩ ℔ 14½c
Sisal, ⅜ inch and larger........................11¼c
Jute, all sizes........................9½c
Screws—"American Screw Co"—
Flat Head, Iron........................dis 62½ %
Flat Head, Brass........................dis 52½ %
Skates and Straps—White's........................dis 20 %
Spoons, Iron Tinned........................dis 10 %
" by the case........................dis 20 %
Plated Rogers' A No. 1........................dis 50 %
Britannia........................dis 50&5 %
Squares—Steel and Iron..............new list 50 %
Scales—Buffalo Scale Works........................dis 25 %
Fairbanks........................dis 15 %
Stove Polish—Gem..............₩ gross, $4 50
" Dixon's........................6 00
Traps, Steel—Newhouse........................dis 20 %
Tacks—Half Weight Am. Iron..............dis 72½&7½ %
Vases—Palace Coal........................dis 10 %
Vises—Parallel, Buffalo........................dis 30 %
Ware—French, Tinned and Iron........................dis 25 %
Stamped and Japanned........................dis 5 %
Cast Iron Hollow........................dis 33⅓ %

Tin Plates.—Add for each X........................2 50

10x14, IC. Charcoal...$11 00		14x20 C. terne......	$10 00
12x12. "	... 11 50	20x28 C. "	20 50
12½x17, "	... 11 00	20x28 X. "	25 00
14x20, "	... 12 00		

Pig Tin—Straits..............25c @ 26c
Bar Tin........................27c

Solder—No. 1, Crook's........................16½c
Refined, No. 1, 15½c; No. 2........................14½c

Sheet Zinc—
"Lasalle"........................570 100 ℔ casks
$10 75 11 05 ₩ 100 ℔s
Sheets........................$10 75

Iron Wire—Bright and Annealed..............dis 45 %
Coppered........................dis 40 %
Tinned........................dis 25 %
Tinned Broom, { Nos. 20 21 22 / 20c 21c 21c } ....dis 30 %

Copper—Sheathing 14 @ 18 oz..............₩ ℔ 30c
Planished..............₩ ℔ 37c @ 39c
Bottoms..............₩ ℔ 33c
Bolts..............₩ ℔ 31 @ 33c
Braziers' Sheets..............₩ ℔ 31 @ 33c

Sheet Iron.—
18 Common........................$4 30
24 Common........................4 50
24 W. D. Wood & Co., Smooth Finish........................5 30
Am. Russia........................A. 14c B. 11c
Gen. Russia, No. 1 stained........................16½c
" " clean........................14½c
Galvanized........................dis 25 %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal..........$12 00 @ 13 00
I. X. 10x14 Charcoal.............. 14 50 @ 15 00
I. C. Terne 14x20.............. 10 50 @ 12 50
I. C. Terne 20x28.............. 22 00 @ 23 00
I. C. Continuous........................23 00

Block Tin.—
Pig........................₩ ℔ 28c
Bars........................₩ ℔ 31c

Solder.—
A 1........................₩ ℔ 18c
Roofing........................₩ ℔ 17c
S. & Co........................₩ ℔ 23c

Lead.—Pig........................₩ ℔ 7½c.
Bar........................₩ ℔ 8½c

Copper.—
Ingot..............₩ ℔ @ 24c
Planished..............." @ 39c
Sheathing..............." @ 33c
Copper Drops..............." @ 33c
Sheets, 6 to 9 ℔..............." @ 38c
" 10 to 12 ℔..............." @ 35c
Braziers, 13 lb..............." @ 32c
Copper Bottoms..............." @ 33c

Zinc. Cask, 500 to 1000 lbs..............₩ ℔ 10½c
Case, 100 lbs..............." 11 c
Slab..............." 7½c

Brass.—Roll, No. 6 to 30..............₩ ℔ 30c
Roll, No. 30 to 38..............." 35c
Wire, No. 0 to 20..............." 35c
" 20 to 25..............." 40c

Babbit Metal.—Sellew & Co..............." 35c
Aliens'..............." 30c
Market..............." 12c

Antimony..............₩ ℔ 17c
Bismuth..............₩ ℔ $4 00
Nickel..............₩ ℔ $3 50

Sheet Iron.—Gen. Russia..............₩ ℔ 20c
Planished A..............₩ ℔ 14c
" B..............." 12½c

	Com. B.	Smooth Fin. S. L. U.	Smooth D Re'fd.
15 to 20	4 3-10	5 5-10	7 3-10
22 to 24	4 4-10	5 4-00	7 4-10
26	4 50	5 50	7 5-10
27	4 75	5 75	7 75

Galvanized Iron.—Full bundles..............dis 25 %

Nos. 18 to 20......	12c	No. 26..............	14c
22 to 24......	13c	27..............	15c

Bar Steel.—Silver, ₩ ℔ 16c; Crescent, 21c.
Iron Wire..............dis 35 %
Enameled Ware..............dis 45 %
One Piece Corrugated Elbows..............dis 10 %

Charcoal Iron.		Russia Iron.	
4½ inch...... ₩ doz	$2 50	4½ inch...... ₩ doz	$5 00
5 " ...... "	3 50	5 " ...... "	7 00
5½ " ...... "	4 50	5½ " ...... "	7 50
6 " ...... "	5 25	6 " ...... "	12 00
7 " ...... "	6 50	7 " ...... "	14 00

Leader Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

₩ doz.		₩ doz	
2-inch..............	$1 75	2½-inch..............	$2 75
3-inch..............	2 25	3½-inch..............	3 25
4-inch..............	2 50	4½-inch..............	3 50

Sheet Iron Bread Pans..............₩ ℔ 10c
American Broilers..............₩ doz. $13 50
Tinmen's Machines..............dis 5 %
Sad Irons..............₩ ℔, 3½c
Brass Kettles.—Ansonia..............48c
Dog Irons..............4 c

PITTSBURGH.

The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent. Iron, standard list assorted sizes, for large orders, c, card rate, 2 % off net.

Flat Rail (1¼x¼), punched and coun'sunk..4.4c ₩ ℔ net
Iron Wedges..............4½c ₩ ℔ net
Norway Nail Rods..............9½c ₩ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)..............5c ₩ ℔ net
Beetle Rings..............8½c ₩ ℔ net
Fence Pickets—
⅝ round, bent to shape, 30c ₩ ft. of fence, less 15 % off net.

Discount off Standard List.
Carriage and Tire Bolts (new list)..............70&10 % off net
Plow Bolts..............30, 10&5 % off net
Stove Bolts..............15 % off net
Machine and Square Head Bolts..............30&10 % off net
Coach and Lag Screws..............30&10 % off net
Bolt Ends..............35 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅝ in..............7½c ₩ ℔ off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in..............6 c ₩ ℔ off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅝ in..............9 c ₩ ℔ off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅜ in..............7 c ₩ ℔ off net
Nuts and Washers in 25 lb. boxes, 1c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, 1c ₩ ℔ ex. Nuts and Washers in 5 lb. boxes, 1½c. ₩ ℔ ex.
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 3¼c ₩ ℔ net; ¾, ⅞ in. diam. 3½c ₩ ℔ net; ⅝ in. diam. 4c ₩ ℔ net.
Patent Headed Harrow Teeth, packed in casks, ½c ₩ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 5¼c ₩ ℔ net; 9-16 in. diam. 6½c ₩ ℔ net; ½ in. diam. 7½c ₩ ℔ net. 1c ₩ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ¾ to 1 in. diam. 9c ₩ ℔ net; ⅝ in. diam. 10c ₩ ℔ net; ½ in. diam. 12 c ₩ ℔ net.
Screw and Strap Hinges, in lots of 100 pairs or more, 14 to 36 in. long, 5¼c ₩ ℔ net; 8, 10 & 12 in. long, 6¾c ₩ ℔ net
Strap and T Hinges.....20 & 10 % off net, delivery as customary.
For purchases amounting to $250 between May 30th and December 31st, 5 % extra off.
Screw Hitching Rings..............$5 25 ₩ 100 net
Duck Nest Tuyere Irons..............$14 50 ₩ doz net
Cast Iron Washers..............₩ ℔ 4c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long..............₩ ℔ 4 c net
1 to 2 in. diam. from 4 to 8 ft. long.............." 4¼c net
1 to 2 in. diam. from 1½ to 4 ft. long.............." 4½c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long.............." 4¾c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long " 5½c net
Bridge bolts with upset ends..............½c. ₩ ℔ extra
Wrought iron plates, punched..............5c. ₩ ℔ net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at Screw End, ₩ set of	8 bolts..	55c
12 " ½ " "	8 " ..	70c
10 " 9-16 " "	8 " ..	} 90c
12 " 9-16 " "	8 " ..	}
14 " 9-16 " "	8 " ..	$1 00
10 " ⅝ " "	8 " ..	} 1 00
12 " ⅝ " "	8 " ..	}
14 " ⅝ " "	8 " ..	1 10
16 " ⅝ " "	8 " ..	1 20

5c ₩ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wagon Box Rods, narrow track, each..............18c
" " wide track, each..............20c
Single Tree Irons, ₩ set of four pieces..............38c
Wrought Iron Bolster Plates, 2¾ in. wide, ₩ set......60c
" " 3 " "......65c
" " 3¼ " "......70c
" " 3½ " "......75c
Wagon Brake Ratchets, each..............16½c
" " finished with guard, each..45 c
Wrought Hammer Straps, heavy pattern, each......16 c
" " " light " each......13½c
" Rub Irons, each..............11 c
Stay Chain Hooks, each..............8 c
Double and Single Tree Clips, figure 1, each..........9 c
" " " " 2, each..........10 c
" " " " 3, each..........12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 sets..............dis 25 %
Wagon Box Staples, 1¾ to 2½ in. to clinch. ₩ 1000 $11 00 net
" " Bevel Box Iron, to rivet on. ₩ 1000 7 50 net
Neck Yoke Eyes, each..............4½c net
" " with ⅜ rings, each..............7½c net
King Bolts, ⅞, 1, 1⅛, and 1¼ in. diam........₩ ℔ 4½c net
Wagon Rivets, ex. large, flat, oval and steeple head, ½ in. diam. all lengths.............." 8½c net
Wagon Rivets, 3-16 in. diam., all lengths....." 9½c net
" & Nails, in 5 ℔ paper boxes....₩ ℔ 1c extra
" in 25 ℔ wood " ....." ½c extra
Wagon and Hinge Nails, ¼ in..............₩ ℔ 17 c net
" " " 3-16 in.............." 19 c net
Double Tree Plates.............." 8½c net
Coupling ".............." 5½c net
Tongue ".............." 9 c net
Neck Yoke Plates.............." 11 c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₩ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in. ₩ ℔ 10½c net. ¼ in., 11½c. net

DETROIT.

(Reported by Messrs. Jewett & Root.)

TinPlate.—Best Charcoal
IC. 10x14..............$11 50
IX, 10x14.............. 14 25
XX, 10x14.............. 17 00
IC. 12x12.............. 12 00
IX. 12x12.............. 14 75
IC. 14x20.............. 12 50
IX. 14x20.............. 15 25
XX. 14x20.............. 18 00
XXX. 14x20.............. 20 75
XXXX. 14x20.............. 23 50
DC, 100 Plate.............. 11 00
DX. ".............. 13 75
DXX, ".............. 16 50
DXXX ".............. 19 25
DXXXX 100 Plate.. 22 00
IX, 14x14.............. 23 25
IC, 10x14 W.............. 11 00
IX, 10x14 W.............. 14 75

Roofing Tin.—Best Char.
IC, Terne, 14x20......$10 50
IX, " 14x20...... 13 25
IC, Terne, 20x28.... 22 00
IX, " 20x28.... 27 00

Coke Tin.—
IC, 10x14 Coke......$10 00
IX, 10x14. Coke.... 12 75
IC, 14x20, ".... 11 00

Pig Tin.—
Large Pigs..............29c
Small Pigs..............29½c
Bars..............30c

Solder.—No. 1.......16c
No. 2..............15c

Sheet Zinc.—
In any quantity......10¾c

Bright Wire.
63 lbs. in bdl.....dis 40 %

Copper.—
Sheathing..............31c
Copper Bottoms.....32c

Planished Copper.—
Sheathing, 14x48.......38c
Boiler Size, No. 7.....40c
" " No. 8. ...40c
" " No. 9 ....40c

Sheet Iron.—
No. 18 Am. Com.......4 40
No. 24 Am. Com.......4 60
No. 26 Am. Com.......4 80
Patent Planished Russia, Nos. 24, 25 and 26....14c
Genuine Russia, No. 9, 10, 11 and 12..............18c
Broken bdls. ½c. extra.

W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $5 10
" 21 to 24.......... 5 30
" 25 & 26.......... 5 50
" 21 to 24 Char'l.. 6 80
" 25 & 26 " .. 7 00

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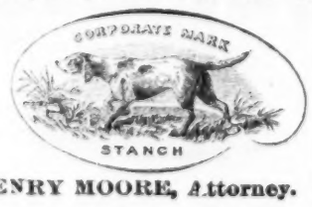

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Potter & Hoffman, Philadelphia, Pa.
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Augers.—Watrous Ship.....dis 10 %
L'Hommedieu Ship.....dis 15 %
Axes.—Forester's Favorite, Bronzed.....$12 00
Blue Jackets, Blue..... 11 5
Excelsior, Black..... 11 00
Chopper's Pride, Bronzed..... 10 50
Red Cross, Red..... 10 00
Red Cross, Handled..... 12 50
Boy's Handled Blue Jackets..... 12 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2·50. B (No. 1) $2·00. C (No. 2) $1·50 ₱ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1.....$1·70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 36, No. 1.....1·80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1.....·38
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 36, No. 1.....2·50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1.....3·38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 36, No. 1.....3·50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1.....per pair, 50c.
Common, 6, No. 1..... " 45c.
Blind Hinges.—
Orr or Washburn's.....per hundred sets $9 50
Blind Fasts.—
Orr or Washburn's.....per hundred set $6 00
Bolts.—Carriage, Phila., "Girard Works.....dis 50&10 %
Borax.—Best Refined.....₱ lb 15c
Borers.—Angle, Backus.....dis 30 %
Boring Machines.—Angle.....each $4 75
Common, Snell's quality.....each 3 75
Braces.—Barber's.....dis 40&5 %
Backus'.....dis 50 %
Spofford's.....dis 50 %
Amidon.....dis 50 %
Brackets.—Star Bronzed.....dis 50&10 %
Star Japanned.....dis 60&10 %
Store Shelf.....dis 35 %
Brass Faucets.—L. F. & C.....dis 25 %
Butts.—Union Drilled Loose Joint.....dis 45&10 %
" " Wire Fast Joint.....dis 25&10 %
" " Acorn Loose Joint...dis 40&10 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps.....dis 30 %
Wrought Narrow Butts.....dis 30 %
Can Openers—Sprague's.....dis 50 %
No. 1, Iron Handle.....$4·00
No. 2, Wood Handle.....4·50
Cartridges.—" U. S. Cartridge Co."....dis 50&10 %
Chisels.—"Buck Bros.' Star" Goods...add 20 @ 22½ %
Socket.....add 22½ @ 25 %
Churns.—Lightning—

	3	4	5	6 gall
Redheffer patent.....	per doz $22 00	$27 00	$31 50	$36 00

Coal Hods......dis 25 %
Fancy Japanned, No. 4, 15 in., $8·00; 5, 16 in., $9·00; 6, 17 in., $10·00.
Fancy Galvanized, No. 4, 15 in., $11·50; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Jap'd, No. 4, 15 in., $12·00; 5, 1 in., $13·00; 6, 17 in., $14·00.
Perfection, Galv'd, No. 4, 15 in., $15·00; 5, 16 in., $16·00; 6, 17 in., $17·00.
Morning Glory, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Morning Glory, Galv'd, No. 4, 15 in., $15·00; No. 5, 16 in., $16·00; No. 6, 17 in., $17·00.
Compasses and Dividers.—Bemis'.....dis 35 %
P. S. & W.....dis 25 %
Cordage.—Manila (usual trade dis.).....₱ lb, 18c
American Tarred Hemp Lath Yarn.....₱ lb, 10c
Corn Hooks.....per doz $2·75
Cow Ties.....dis 10 %

No. 30, Open Ring, 3 feet,	No. 6,	with Toggle	$3·70
No. 35,	"	3	"	No. 6,	"	Snap	3·90
No. 40,	"	3¾	"	No. 5,	"	Toggle	4·25
No. 45,	"	3½	"	No. 5,	"	Snap	4·40
No. 50,	"	4	"	No. 4,	"	Toggle	4·85
No. 55,	"	4	"	No. 4,	"	Snap	5·00
No. 60,	"	4½	"	No. 3,	"	Toggle	5·60
No. 65,	"	4½	"	No. 3,	"	Snap	5·80

Crow Bars.—Iron. Steel Points.....₱ lb, 5½c
"Sweet" Steel Bars.....₱ lb 11c
Brown's Steel Bars.....₱ lb 10c
K. P. & Co. Extra Drill Steel.....₱ lb 15c
Dividers.—Cook's Nickel Plated.....dis 15 %
Door Springs.—Stimson's Patent.—
No. 7, Light inside doors, $12·00.....dis 25 %
No. 8, " outside " $18·00.....dis 25 %
Torrey's.....$4·00
Egg Beaters.—Lightning, Redheffer pat..1 qt., 2 qts. per doz $8 00 $12 00
Emery.—Alden.....₱ lb 6½c
Wellington Mills.....₱ lb 10c
Files.—Earl Smith & Co.'s English.....$5 to £ gold
American.....$5 to £ currency, less 12½ %
Nicholson.....new net list
Wheeler, Madden & Clemson.....45 net
Stubb's Tapers, genuine, 3 in., $1·20; 3½, $1·62; 4, $1·88; 4½, $2 13; 5, $2·50.
Funnel Irons.—$2·50 2·50 2·50 3·25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3·50 3·75 4·00
5, 5½, 6 inch.
Hammers.—Maydole.....dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $12·75
" " " " " bell face, No. 1, $11; 1½, $13·75.
Hangers & Rollers.—Novelty.....dis 30 %
Anti-Friction.....$1 75 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co.....dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling.....0, $4·75; 1, $5·25; 2, $5·75
Claw.....1, $5·75; 2, $6·25
Lathing.....1, $5·50
Axe Pattern.....1, $7·00; 2, 7·50
Broad.....0, $5·75; 1, $6·50; 2, $7·50; 3, $9·25; 4, $10·75; 5, $12·75; 6, $14·75.
Hinges.—Strap and T, Stanley Works.....dis 35&10 %
Plate, Loose and Fast Joint.....₱ lb 6c
Wrought Screw Hook.....₱ lb 6½c
Knobs.—Young's Imp. Silvered Glass.....dis 45 %
Lanterns.—Tubular No. 0.....$9·50
Guarded, No. 74, (with kerosene oil and candle burners).....6·25
Lead.—Sheet and Pipe.....9c—less 10 %
Locks.—Norwalk Lock Co.....dis 45&5 %
Mattocks.—
K. P. & Co., axe finish, long cutter.....$13 00—dis 10 %
Short cutter..... 12 75—dis 10 %
Meat Cutters.—" Miles's" Challenge.....dis. 20 %
No. 1, $22·00; 2, $30·00; 3, $40·00.
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ₱ lb
Nails.—10d and larger—dis 15c 100 keg lots.....$3 50
Nail Pullers.—Little Giant—Small.....per doz., $22·00
Little Giant—Large..... " 30·00
Padlocks.—Wilcox.....dis 45&5 %
All Brass, 2½ inch, 2 keys, job lot.....$9 00
Paper.—Tar'd Sheathing.....₱ lb 2 c
Dry Sheathing..... " 3½c
" " "Beaver Brand" Rosin Sized.. " 4½c
Tar'd " " " " " 3½c
Felt " " " " " 4½c
Picks.—
K. P. & Co. Axe Finish..₱ doz 5 to 6 $8·50; 6 to 7 $9·00
" " Solid Eyes.....5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hat and Coat all wood—
2 in.....₱ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Digger.—
" Partridge," 6 square tine.....₱ doz $12 00
Shumway & Co., 6 round tine.....₱ doz 9 00
Pulleys.—Axle.....1¾ No. 15, 31c; 1¾ No. 18, 33c; 1¾ No. 28, 42·; 2 No. 29, 49c.
Nashua, Bronzed Face.....1¾, 30c; 2, 90c
Steel Axle " " .....2, $1·00
Pulley Blocks.—" Best Boston Make".....net
Common Strapped Blocks—

4	5	6	7 inch.
Single, 75c.	88c.	$1·00	$1·13 each.
Double, $1·00	1·12	1·25	1·60 "

Inside Iron Strapped Blocks—

5	6	7	8	9	10 inch.
Single, $1·00	1·13	1·38	2·00	2·25	1·75 each.
Double, 1·88	2·30	2·62	3·63	4·00	5·00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

5	6	7	8	9	10 inch.
Single, $1·25	1·50	1·65	2·50	2·65	3 50 each.
Double, 2·50	3·00	3·38	4·63	5·00	6·50 "

Plated Ware.—Rogers bros.....dis 50 %
Plumb & Levels.—" Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels.....dis 50 %
No. 2, First Quality Levels.....dis 60&10 %
No. 3, Iron Pocket.....dis 35 %
No. 4, Level and Plumb Glasses.....dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge.....dis 50&10 %
No. 6, Improved Iron Bench Planes.....dis 50&10 %
Pocket Knives.—Conn. Cutlery Co.....new net list
American Shear Co.....dis 33⅓ %
Rail Barn Door.—For Novelty and Anti-Friction Hangers.....per foot 7c.. dis 30 %
Rivets.—Black.....dis 25 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8,
13 13 14 14 15 16c ₱ lb net
Rubber Moldings.—" Harmon's".....dis 10 %
No. 2, for Windows.....per foot, 5c
No. 3, for Doors.....per foot, 10c
No. 4, " .....per foot, 12c
Sad Irons.—Bless & Drake.....₱ lb 3½
Sand Paper.—0 to 2, $4·25; 2 to 3, $4·75.....dis 10 %
Saws.—*Hand and Panel*—
Wheeler, Madden & Clemson's, same list as "Disston's".....dis. 15 %
Disston's.....dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts.....per ft., 37c
" " " "Star" X Cuts. " 60c
" " " Champion X Cut. " 50c
" " " One Man X Cut..each, $2·25
Boynton's genuine Lightning X Cut.....per ft., 60c
" " " One Man X Cut..each, $2·25
Circular—Wheeler, Madden & Clemson's.....dis. 25 %
Mill— " " " .....dis. 25 %
Screws.—American Screw Co.....revised list dis 62½ %
Aiken's.....dis 60&10 %
Scythe Stones.—
" Willoughby Lake," first quality.....₱ gross $6·50
" " second quality..... " 3·00
Shovels.—O. Ames.....new list dis 12½ %
M. B. & D.....new list dis 12½ %
Snow, Malleable Iron Tip, D Handle—Agents for New England.....$6·50
Snow, Malleable Iron Tip, long Handle—Agents for New England.....5·50
Sifters.—Coal, Rice, &c.....$12 00
Spading Forks.—M. & E.....dis 25 %
Stone Pickers.—" Partridge," original...₱ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Farr's..$8·00 per doz
Traps.—Oneida.....dis 20 %
Blake's.....dis 30 %
Vises.—K. P. & Co.'s Solid Box. Blacksmith....₱ lb 13c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
" Howards." Parallel.....dis 20 %
Wardrobe Hooks.—Wire to drive.....₱ gross $1 00
Weather Strips.—" Harmon's".....per doz $5, dis 10 %
Weights.—Window Weights.....₱ lb 2c
Wedges—Axe.....₱ doz 38c
Wire.—
Eureka, in spools, No. 28 to 40 assorted...₱ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black.....₱ ft 5½c
Wrenches.—Genuine Wrenches, G. A. Coes..dis 40&5 %
Walton.....dis 50 %
Wringers.—
Novelty and Universal } Tub No. 2 } .....Less than 2 doz, $64 00
.....2 doz or more, 62 00
Bench A... less than 2 doz $82 00; 2 doz or more $80 00
" B... " " " 90 00 " " 88 00
" C... " " " 108 00 " " 105 00
Eureka.....per doz $58 00
Withington, Cooley & Co.—
Hoes, Rakes, Forks, &c.....dis 33⅓ %

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—₱ box
I. C. Char. 10x14 @ $9·25
I. C. Coke 10x14.. 9 00
Char. Roof. IC, 14x20, 10 75
Coke " IC, 14x20, 10 25
Pig Tin.—₱ lb
Banca.....31c
Straits.....24½c
English.....24½c
Zinc.—Sheet..₱ lb 10½c
Iron.—Sheet Iron, Russia..... " 17c
Sheet Iron, English..... " 5 :
" " American Refined..... " 5¾c
" " Galvanized..... " 10c
Plate Iron..... " 3¾c
Swedish and Norway Bar Iron gold..₱ ton, $120 00
" " " Shapes gold.... " 127 50
Norway Nail Rods, first quality, gold.... " 140 00
" " second " " .... " 132 50
Best Refined Bar Iron..... " 62 50
The "Burden Best" Iron..... " 100 80
American Pig Iron, Foundry, No. 1 X.... " 31 00
" " " No. 2 X.... " 29 00
" " Gray Forge..... " 27 00
Scotch Pig Iron.....₱ ton 36 00 @ 39 00
Wrought Scrap Iron..... " 34 00
Steel.—₱ lb
Eng. Tool..... 19c
American Tool..... 14¾c
" Mach..... 10c
Bessemer..... 7¾c
Copper.—₱ lb
Sheathing..... 20.
Bolt..... 22c
Ingot..... 22c
Lead.—₱ lb
Pig..... 7¾c
Sheet & Pipe..... 8½c
Spelter......₱ lb 7¾c
Antimony......₱ lb 13c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror.....₱ doz, $2 25
Hudson's Rotary..... " 5 50
Axes.—Wm. Mann's, Red Warrior.....₱ doz, $11 00
Wm. Mann's, W. Stewart's..... " 17 00
" C Marshall..... " 10 50
" Handled..... " $5 extra
" Double Bitted..... " 2. 50
H. L. B. & Co.'s, L. & Co..... " 11 50
" Pioneer..... " 12 00
" James & Co..... " 11 00
Hunt's..... " 17 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent, Swelled Taper, Plain Taper and Concord Axles.....dis 10 & 5 %
Common Axles (Pat. Lubricating), 1⅛ inch and unward.....₱ lb. 6¾c.
do. less than 1⅛ inch..... " 7 c.
Bellows.—dcs. St. Louis make, 6in ₱ in. dis 20&2½ %
Bells.—Troy, Church, School and Farm Bells.. ₱ lb 44c
"Improved Amalgam Bronzed," 15 in $3·00; 17 in., $4·01; 19 in., $6·00.....dis 10 c
Belting.—"Boston Belting Co.'s Rubber..dis 5 & 7½ %
"Bradford & Sharp's" Oak-Tanned Leather.....dis 30 %
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 70&10 %
Arms, Bell & Co.'s Machine.....dis 5&10 %
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint.....dis 25&10 %
Broad Fast Joint.....dis 5 &10 %
" Loose " .....dis 45&10 %
Reversible.....dis 40&10 %
" Japanned and Silver Tipped.....dis 40&10 %
Wheeling Hinge Co.'s W't Fast Joint Nar.....dis 30 %
" " " Broad.....dis 35 %
" " " Loose Joint.....dis 35 %
" " " Reversible.....dis 35 %
" " " Table & 1½ Flaps.....30 %
Churns.—Julian, No. 2, $7·00; No. 3, $7·50; No. 4, $8·50.....dis 30 %
Cider Mills.
American Senior, $40·00; Am. Junior, $25·00....dis 15 %
Corn Knives.—Dunn Edge Tool Co.'s Clip..... 5 75
Seymour Mfg. Co.'s Solid Steel Back..... 5 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers.....dis 10 %
Hand Shellers.....Special rates
Corn Planters.—Challenge, Horse.....$49.00 net
St. Louis, Hand.....per doz $15·00
Cotton Gins.—Dubois Patent.....dis 10 %
Crow Bars.—Steel Pointed.....₱ lb 6½c
Drag Saw Machines.—
Culver's Iron Drag Saw.....dis 10 %
Robinson's Patent Sweepstakes Drag Saw.....dis 10 %
Fanning Mills.—Nash & Cutt's.....dis 15 %
Feed Cutters.—Improved Burdick National...dis 15 %
Sanford No. 1, $12 00; No. 2, $8 75.....net
Files.—Black Diamond, Mill.....$5·00 £ currency.
" Bastard.....5·00 £ currency.
" Taper.....5·00 £ currency.
Forges.—Keystone Portable Forge Co.'s.....dis 12½ %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks....dis 33⅓ %
" Handled Hoes.....dis 33⅓ %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe.....dis
" Planet Drill, Nos. 2 and 3.....dis
" Combined Drill and Wheel Hoe.....dis
Grinding Mills.—French Burr Mills.....net
Challenge Feed Mills.....dis
Sedgebeer's Nonpareil Mills.....dis
Osage Corn and Cob Mill.....dis
Hammers.—Masons' Hammers.....₱ lb 20c
Smiths' Hand..... " 50c
Handles.—No. 1 Fork, Hoe and Rake.....dis 20 %
No. 2 Fork, Hoe and Rake.....dis 40 %
Harrow Teeth.—1 inch iron.....₱ lb 4½c
⅞ and ¾ inch iron..... " 4¾c
Barbed or Headed..... " ¼c extra
Hay and Cotton Presses.—
Dederick's Railroad.....dis 5 %
" Perpetual.....net
Hay Knives.—
Dunn Edge Tool Co.'s.....₱ doz $15 00—dis 15&5 %
Lightning (Weymouth's Patent).....₱ 1 oz $2·00
Hinges.—
Wheeling Hinge Co.'s Strap & T.....dis 33⅓&10 %
Horse Hay Fork.—Nellis' Harpoon.....dis 15 %
Horse Nails.—National Patent Pointed.....20c rates
National Patent Pointed, extra finished.....25c " "
Horse Powers.—Pitts or Carey's Patent.....dis 10 %
Wheeler's Railway.....dis 10 %
Sandwich Lever.....dis 10 %
Horse Rasps.—Heller Bros.....dis 45 %
" Black Diamond".....$6·00 to the £ currency
Horse Shoes.—
Rhode Island (Perkin's Pattern).....₱ keg, $6 25
" Mule..... " 7 25
" Trotting Shoes..... " 8 75
Tredegar Horse.....per keg $6 25
" Mule.....per keg 7 25
Hose.—
Boston Belting Co.'s Rubber Medium Sizes..dis 30&10 %
" " Small Sizes, Hydrant.....dis 40 %
Ice Tools.—W. T. Wood & Co.'s Saws.....new list net
W. T. Wood & Co.'s Chest Hatchets.....new list net
" " Axes.....new list net
" " Loading Tongs.....new list net
" " Medium, Small and Family Tongs.....new list net
" " Claws, Hooks and Grapples.....new list net
Lawn Mowers.—Archimedean.....dis 20&5 %
Charter Oak.....dis 20 %
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks..₱ doz $13 00 @ 13 5
" " Grub Hoes, oval eye " 10 00 @ 11 50
Money Drawers.—
Pierpont & Co.'s Excelsior.....per doz $40·00 net
Nails.—Wheeling.....$3 25 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 30 %
Boston Belting Co.'s Rubber, Pure.....dis 25&5 %
" " No. 2 Plain.....dis 40 %
" " Round and Square....dis 10&10 %
Picks.—Klein, Logan & Co.'s Railroad and Clay.....₱ doz $9 00 @ 11 00
Klein, Logan & Co.'s Coal..... " 7 45 @ 8 40
" " " Pick..... " 12 00 @ 15 00
" " " Stone..... " 14 40 @ 14 90
" " " Tamping..... " 14 70 @ 15 25
" " " Miners' Drifting..... " 10 25 @ 12 80
Plows.—Avery's Cast and Steel.....dis 15 %
Collins Cast Cast Steel.....new list net
Pekin Steel.....new list net
Post Hole Augers.—Clark's Patent—
No. 1, ₱ doz. $27; No. 2, $30; No. 3, $32.....dis 20 %
Pulleys.—5 inch.....per doz $4·25 net
4 inch.....per doz 3·25 net
Nellis' Patent.....new list dis 15 %
Pumps.
St. Louis, Farm, Patent Metal Lined...new list dis 50 %
Rakes.—Paddock's Premium Sulky.....$30 00 net
St. Louis Revolving 14 tooth..... 5 50 net
" " " 16 " ..... 6 00 net
" " Hand Hay Rake.....dis 10 %
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives.....dis 40 %
" " " Sections.....dis 40 %
Road Scrapers.—Steel.....dis 25 %
Cast Iron.....dis 10&2½ %
Sad Irons.—Monitor Brand, Silver Polished..₱ lb 6c
Sash Weights.—Standard Solid Eyes.....₱ lb 3½ c
Saws.—Curtis & Co.....dis 10 %
Scythes.—Dunn Edge Tool Co.'s.....new list dis 20&5 %
Scythe Stones.—No. 1 Ind'a Pond ₱ gr's, $7·00
Extra Indian Pond..... " 7 50
Premium..... " 10 50 dis 25
Diamond Grit..... " 13 00
Shovels and Spades.—Myers & Armor.....dis 15 %
O. Ames & Son.....dis 5 %
Grain Scoops, (Pat. Corrugated Straps) M. & A. dis 15 %
" " " T. Rowland's dis 15 %
" " " O. Ames & Son dis 5 %
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.....₱ lb 15c
Solid Cast Steel..... " 35c
Spaths and Cradles.—Seymour Mfg. Co.'s..dis 50 %
Sorghum Machinery.—Bell Cane Mills.....dis 15 %
Scantlin's Seamless Evaporators.....dis 10 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express.....dis 12½ %
Blue Seat Springs.....dis 15 %
Thimble Skeins.—Pump & Skein Co.'s.....dis 60 %
Vises.—Solid Box.....₱ lb 16c
Wilson Mfg. Co.'s.....dis 15 %
Wheelbarrows.—Railroad & Garden.....new list net
Wrenches.—Coes' Genuine.....dis 33⅓ %
Coes' Pattern.....dis 50%
Wagons.—Whitewater Farm Wagons—
Thimble Skein.....No. 3, $16; 3¼, $20 3½, $81
Iron Axle.....No. 1½, $80; 1⅝, $83 1¾, $90

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Char	11 00	IX, continuous, 30 in. x 200 ft.	
IX, 10x14, "	13 50	IC, 10x14, best Coke	$10 00
IC, 12x12, "	11 50	IC, 10x14, good Coke	9 50
IX, 12x12, "	14 00	IC, 10x20, Tern	10 50
IC, 14x20, "	12 00	IX, 10x20, Tern	16 00
IX, 14x20, "	14 50	IC, 14x20,	13 00
IC, 14x20, "	15 00	IX, 14x20,	10 00
IC, 20x28, "	22 00	IC, 20x28,	19 00
IX, 20x28, "	27 00	IC, 14x20, Coke Lead	9 50
IC, continuous 30 in. x 200 ft		IC, 10x14, punch'd for Safes	10 50

Block Tin.

Large Pigs	27c	Bars	27c
Small "	28c		

Sheet Zinc.

Casks	₱ lb 10c	Sheet	₱ lb 10½c

Solder.

No. 1, Refined, in bars or pipe	16c
No. 2, " " "	15c
Pig Lead	7c

Sheet Copper.—18 to 100 lbs. Sheets 30x60.....31c
14 to 16 lbs., Sheets 30x60..... 31c
10 to 12 lbs., " and 30x72..... 32c
6 to 9 lbs., " " 32c
Tinned, 14 and 16 oz. 14x48..... 32c
Planished, 14 and 16 oz. 14x48..... 38c
" No. 7, 8 and 9..... 40c
Copper Bottoms..... 38c

Sheet Iron -	Com'n.	Sm'th.	Char'l.	Jun'ta.
No. 16 to 20	4 c	4¼c	6¼c	7½c
No. 22 to 24	4 c	4¼c	6¼c	7½c
No. 26	4¼c	5 c	6½c	7¾c
No. 27	4½c	5¼c	6¾c	8 c

Galvanized Iron.....dis 30 %
Iron Rivets.....dis 25 %
Iron Wire.....dis 47½ %
Coppered Market Wire.....dis 45½ %
Copper Rivets and Burs.....dis 20 %
Russia Iron.—Nos. 9, 10, 11 and 12. ₱ lb.....17c
No. 1 stained, ₱ lb..... 15c
Imitation Russia, ₱ lb..... 14c
Retinned Stamped Ware.....dis 25 %

CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)

Tin Plate.—

10x14, IC, Ch'l. Good	8	14x20, IXX, " "	17 50
10x14, IC, " Best,	11 50	14x20, IXXX, " "	20 00
10x14 IX, " "	14 00	DC, 100 Plate, " "	11 50
12x12, IC, " "	12 00	DX, " "	14 00
14x12, IX, " "	14 50	DXX, " "	16 50
14x20, IC, " "	12 50	DXXX " "	19 00

Roofing IC, Charcoal, Best..... 11 00
Roofing IX, Charcoal " 13 50
20x28, IC, Charcoal Roofing, Com..... 21 00
20x28, IC, " Fair..... 21 50
20x28, IC, " Best..... 22 00
20x28, IX, " " 26 50
10x14, IC, Coke Plates..... 10 00 @ 10 50
14x20, IC, " ..... 10 50 @ 11 00
10x20, IC, ... 16 50

Block Tin.—

Large Pigs	26c	Bars	28c
Small	27c	Straits, 2c. higher.	

Zinc.—Sheet, 500 to 1000 lb. Casks..... 10½c
Loose Sheets..... 11c
Slab Zinc or Spelter..... 7½ to 8c
Copper.—Bottoms..... 34c
Sheathing..... 3 c
Planished..... 38c
" Boiler lengths..... 41c
Ingot..... 24c to 25c
Bolt..... 37c
Brazers' Sheets.—
30x60, 6 to 8 lbs..₱ lb 25c | 30x60, 15 to 100 lbs..₱ lb 31c
30x60, 10 & 12 lbs.. " 28c |
Solder.—F. S. & Co.'s make.
Best Fine..... 20c
No. 1..... 19c
Roofing..... 17c
Brazers' or Spelter Solder..... 32c to 35c
Antimony..... 17c
Babbit Metal—F. S. & Co.'s..... 16c
No. 2..... 14c
Sheet Iron.—

	Common.	Smooth Com.	Smooth Charcoal.	Smooth Juniata.
No. 24	4¼c	5¼c	6¾c	8¾c
25 & 26	4½c	5¾c	7 c	9 c
27	4¾c	6 c	7¼c	9¼c

Galvanized Iron.....dis 25 %

No. 16 to 20	12c	No. 25	15c
21 to 24	13c	26	16c
25 & 26	14c		

Russia Iron.—
Perfect.....19c | No. 1 Stained..... In sheets, 1c. higher.
American Russia.—
A.....14c | B..... In sheets, 1c higher.
Lead.—
Pig.....7¾c | Lead Pipe, in full coils .8¼c
Bar.....8¾c | Lead Pipe, when cut. .8¾c
| Sheet Lead..... .8¾c
Wire—Bright..... dis 35 %
Coppered..... dis 30 %

TO ALL WHO USE STEAM-POWER!

We will put our Governor on any Engine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

ShiveGovernorCo

BETHLEHEM, PA.

ALSO,

SHIVE'S PATENT WATCHMAN'S CLOCK AND DETECTOR.

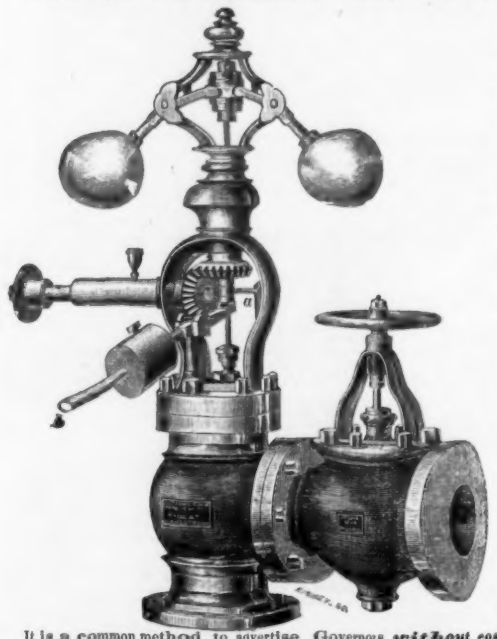
The Best and Cheapest Watcher of the Watchman made

PRICE ONLY $15.

Circulars sent free.

February 10, 1875. REDUCED PRICE LIST OF THE

JUDSON PATENT IMPROVED GOVERNORS.



☞ When Governors are ordered, be particular and say Governor with Stop Valve, or without Stop Valve; and either Black, Finished or Portable, as you may require, and with or without Lever Attachment.

For dimensions and other particulars send for Illustrated List.

Capacity of Valve or Diameter of Steam Pipe in Inches.	Price, Black.	Price, Bright Finish.	Price, Portable.	Price of Lever Attachment for altering speed.	Price of Stop Valve.
¾	18·00	20·00	17·00	..	..
1	20·00	22·00	19·00	..	..
1¼	24·00	27·00	22·00	2·00	5·25
1½	29·00	32·00	27·00	2·25	6·50
1⅝	34·00	38·00	31·00	2·50	8·50
2	41·00	46·00	38·00	2·75	11·50
2¼	47·00	54·00	..	3·25	16·00
2⅜	50·00	57·00	47·00	3·50	17·00
2¾	55·00	62·00		3·75	19·00
3	62·00	70·00		4·25	22·00
3⅜	71·00	80·00		4·50	27·00
4	81·00	92·00		5·00	32·00
4⅜	91·00	108·00		5·50	37·00
5	102·00	114·00		6·00	42·00
5⅜	116·00	129·00		6·50	48·00
6	134·00	148·00		7·00	55·00
7	160·00	176·00		8·00	69·00
8	199·00	219·00		9·00	83·00
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No Larger Portable made than 9⅛ in.

No Charge for Boxing & Cartage.

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The Pratt & Whitney Co.,

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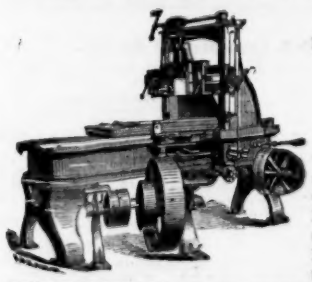

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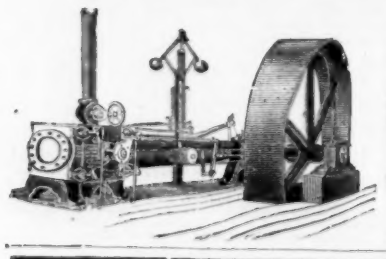

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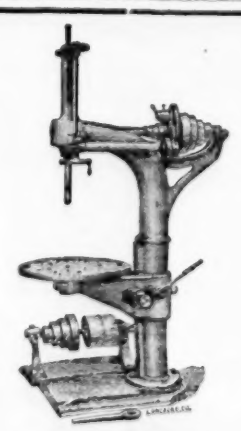

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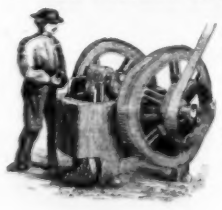

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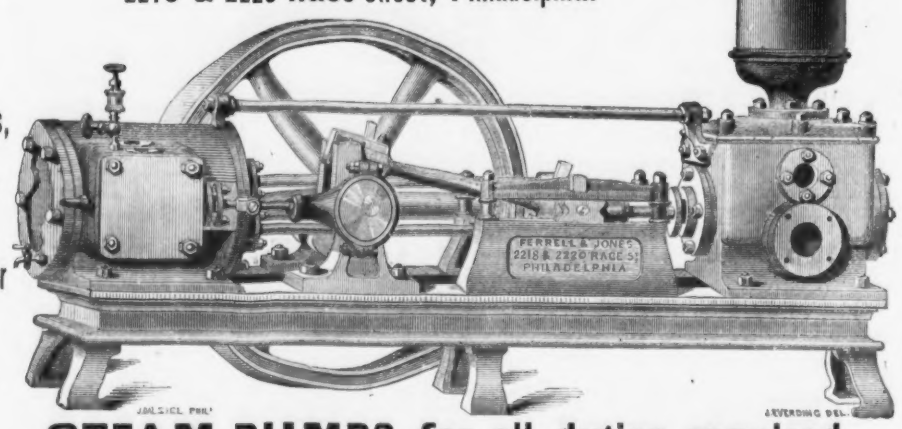

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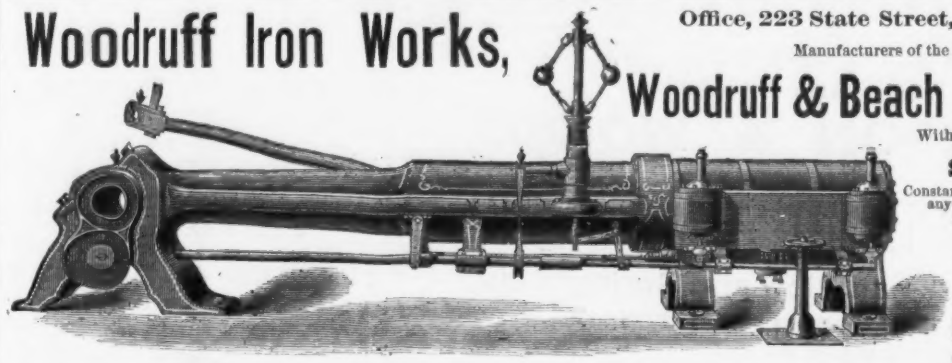

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Cut above represents regular Boiler Feed Pump, No. 3 and 4, Showing New Patent Valve Motion, and Hand Power LEVER Attached and Detached.

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Mining Pumps (both Double Acting Plunger, and Piston Pattern,) which we guarantee to run absolutely noiseless on any lift from 100 to 600 ft., at a single lift, a specialty. Pumps for every possible duty. Prices as low as any, and our workmanship and material altogether the Best.

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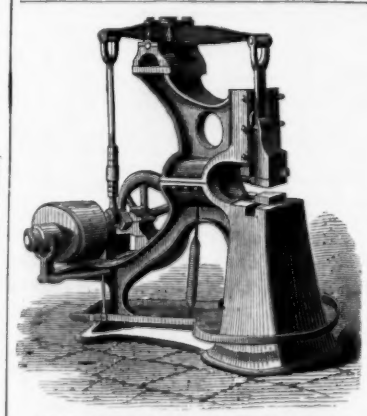

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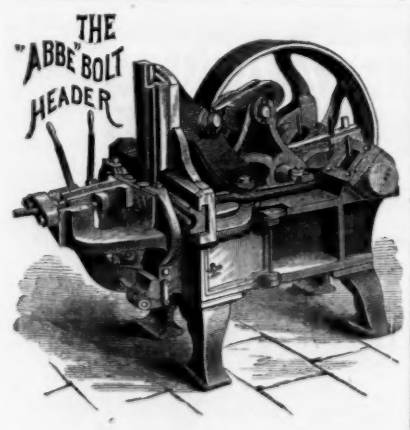

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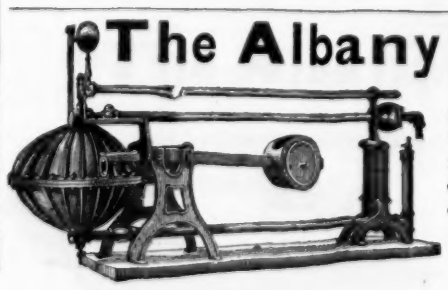

This Trap automatically drains the water of condensation from *Heating Coils*, and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply, to

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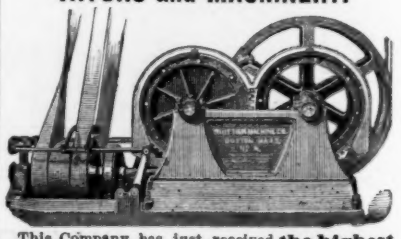

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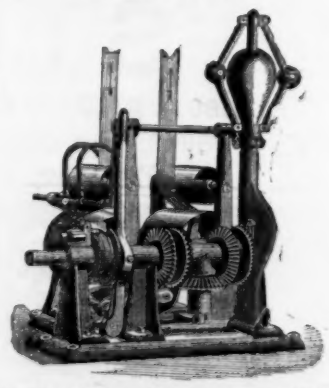

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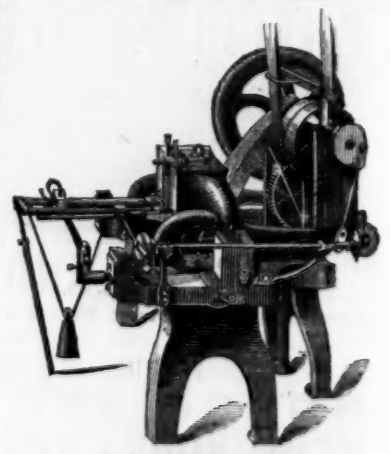

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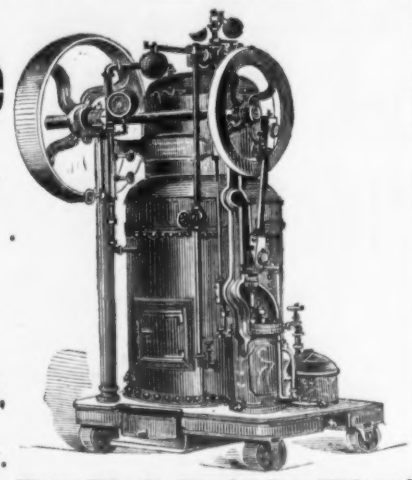

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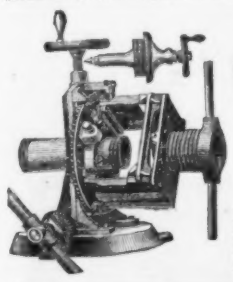

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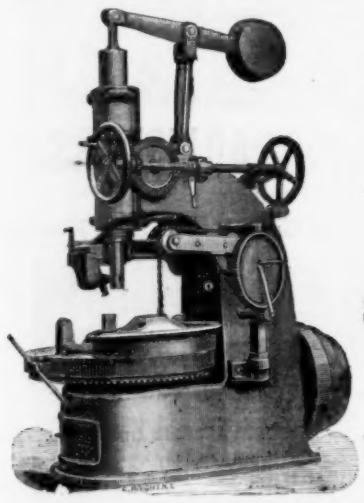

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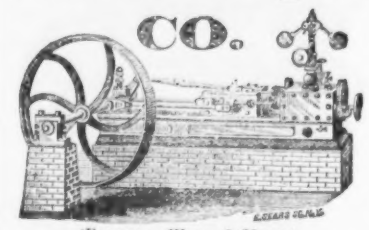

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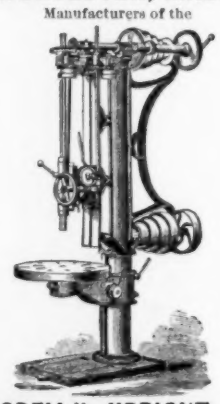

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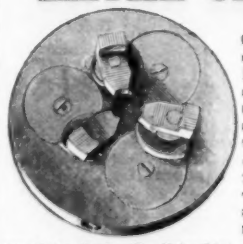

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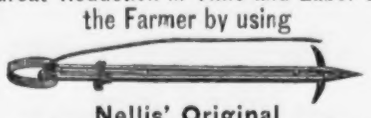

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Grapple and Pulleys; also, Nellis' Patent Stacker and Method of conveying Hay, Straw, &c. A ton of Hay can be delivered in three to five minutes to any part of Mow or Stack. The right of Stacker and Conveyer granted FREE to the Farmer purchasing our Horse Hay Fork and Fixtures during season of 1875.

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ESTABLISHED 1840.

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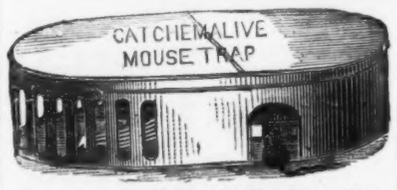
No. 54 & 56 Fulton, and
29 & 31 Cliff Street, New York,

Manufacturer of the



Each mouse caught resets the Trap for another.

TUBULAR

And Other

Patent Lanterns

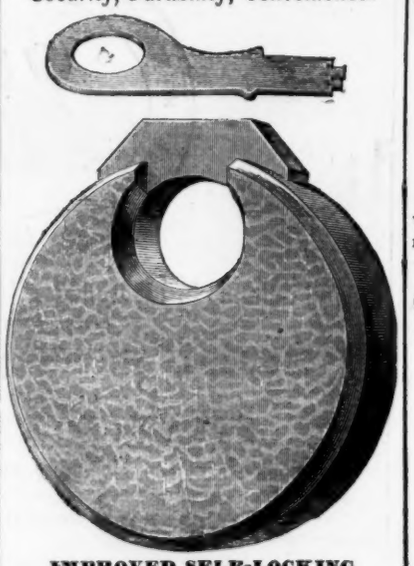
BRASS AND IRON

Jack Chains.

D. K. MILLER LOCK CO.,

712 Cherry St., Philadelphia, Pa.

Security, Durability, Convenience.



IMPROVED SELF-LOCKING

Brass Pad Locks.

Made in the most substantial and compact manner, and are in every respect a superior article. We guarantee that no two locks are alike, unless specially ordered. Each lock furnished with two keys. Any number of locks or keys made to order. Adopted by the United States Government. Samples of No. 1 Lock sent to all parts free, on receipt of $1·75. **Liberal Discounts to the Trade.**

GAS FIXTURES.

Lamps, Bronzes,

Equal to any made, in great variety, all of our own manufacture.

BRADLEY & HUBBARD MFG. CO.,

SALESROOMS:

21 & 23 Barclay, cor. Church St., NEW YORK.

HOISTING Machinery

Mfd. by

CRANE BROS MFG. CO.,

Chicago.

SARGEANT MFG. CO.,

Manufacturers of

Saddlery Hardware

In Gold, Silver, Nickel, Japanned, Lined, & X C.

Sole Manufacturers and Patentees of various Patented Improvements, including **Gig Trees, "Imitation Covered Mountings," Wedge Buckles,** &c., &c.

75, 77 & 79 Summit St., NEWARK, N. J.

Established 1827.

DIXON'S CRUCIBLES,
DIXON'S STOVE POLISH,
DIXON'S GRAPHITE PENCILS.

For Sale by the trade universally.

Joseph Dixon Crucible Co.,

ORESTES CLEVELAND, Prest.

JERSEY CITY, N. J.

Russell, Burdsall & Ward,

PORT CHESTER, N. Y.

Manufacturers of

Carriage, Tire, Plow, Stove.

AND OTHER

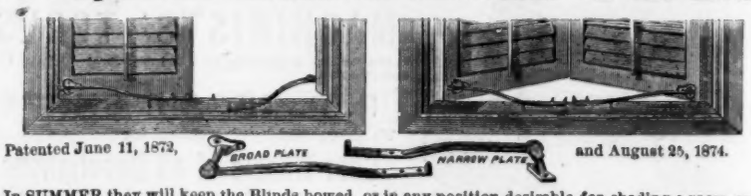
BOLTS.

Carriage Bolts made from Best Square Iron, a Specialty.

THE "DOMESTIC" BLIND ADJUSTERS.

Hold the Blinds in any Position,

And Require No HOOKS OR CATCHES on the House.



Patented June 11, 1872, and August 25, 1874.

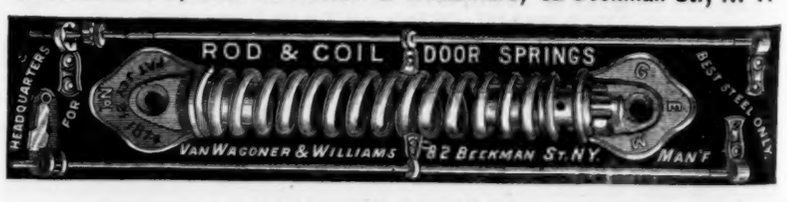
In SUMMER they will keep the Blinds bowed, or in any position desirable for shading a room, and in WINTER they enable them to be opened or closed *without reaching out of the window*, by simply raising the sash a few inches. **INVALUABLE FOR BAY WINDOWS.**

GRAY'S ADJUSTABLE BENCH CLAMP.

Easily Adjusted and Well Made.

Sizes	3	4½	6	8½	11 inches.
Per dozen	$4 00	5 00	6 00	7 00	8 00

Manufactured by VAN WAGONER & WILLIAMS, 82 Beekman St., N. Y.



DERBY SILVER CO., Derby, Conn.,

Manufacture the most reliable

SILVER PLATED SPOONS & FORKS.

They are plated by weight, and not by time or guess, containing 20 per cent. more silver than the usual standard, on a base of Nickel Silver, and finished by hand. Each article is guaranteed by the trade mark and warranted to give full satisfaction. We ask of the trade a fair and impartial test, assuring them that the high standard already attained, shall be maintained. Send for Catalogue and Price.

Pat. Open Way

Schofield's Pat. Gauge Cock.

HENRY C. MEYER & CO.,

Manufacturers of

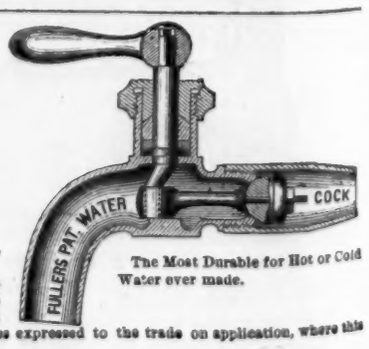
BRASS WORK

For Water, Gas and Steam.

Importers and Dealers in **PLUMBERS' MATERIALS,**

46 & 48 Cliff Street, N. Y.

Specialties manufactured and controlled by us: Fuller's Patent Faucets and Mineral Water Cocks; Murdock Hydrants and Street Washers; Flower's Open Way Valves; Schofield's Gauge Cocks; Hall's Lock Gas Cocks. Illustrated Catalogues expressed to the trade on application, where this advertisement is referred to.



The Most Durable for Hot or Cold Water ever made.